

# 2009 University of Puerto Rico Extension Plan of Work

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## I. Plan Overview

### 1. Brief Summary about Plan Of Work

This plan of work of the Puerto Rico Agriculture Extension Service (PRAES), University of Puerto Rico Land Grant College at Mayaguez, covers the fiscal years 2009 2013. This plan has a total of 195.2 FTE's for each of the years covered in this period.

The College of Agricultural Sciences (CAS) continued working on the Strategic Plan implementing its mission and vision, analyzing values, searching the external and internal environments, establishing strategic direction objectives and the Plan of Action.

Extension maintains close relations with government agencies, decision makers, research scientists, and the clientele helping them to gain insight on what has happened and what is likely to happen during the next years. The staff of the local Extension offices establishes relations with key leaders such as: mayors, senators, representatives, directors, officials of organizations, and business people interested in/or related to Extension's agenda. They invite these stakeholders to participate in Extension activities and in the Stakeholder Input Process meetings and meetings of the Community Resources Development Committee. The collaborators from the public sector are personnel from the departments of Agriculture, Education, Health, Consumer Affairs, Labor and Human Resources, Transportation, Drug Abuse Prevention, and other government agencies (The Police Department, the Water and Sewer Authority, the Electric Energy Service, Forest Services, and the Youth Affairs State office). From the private sector, people from banks, cooperatives, and industry (agricultural, pharmaceutical, textiles, etc.), as well as religious, civic, and social leaders from different organizations, participate in the assessment process determining local needs, offering their collaboration, and involving their organizations in the search of solutions to problems. Extension specialists and administrators also maintain good relations with key leaders at the state level.

New coalitions were developed during the past year and new ones are expected to be established. The Planning and Evaluation Office trained all the professional personnel on the preparation of their plans of work based on clientele needs, supported by up-to-date statistical data and outlook reports and pursuant to federal and state government public policies.

#### PLANNED PROGRAMS:

##### AGRICULTURE, MARKETING AND NATURAL RESOURCES

The livestock sector in Puerto Rico includes dairy, beef cattle, swine, poultry (broiler & laying hens), fish, shrimp, rabbits, goats, and sheep. It represents approximately 48% the island's total gross agricultural income, (Statistics, Puerto Rico Department of Agriculture for FY 2005 2006). During the past four decades, milk production has been its most important enterprise, but the stability of the industry has been challenged by several factors. Current trends of the industry show a steady decline in the number of farms while the average herd size has increased correspondingly. At the same time, the number of acres dedicated to forage production at the average dairy has been significantly reduced by 12% over the past ten years. The insufficient land for feed production has resulted in the farmers' increasing dependence on imported ingredients to feed their milking cows. Consequently, there has been an increase in the number of dairy cows in confinement or semi confinement and in the need of comprehensive nutrient management at the farm level to increase efficiency and reduce the threat of soil and water contamination. In addition, the steady reduction in fresh milk consumption during the past years has exacerbated the economic stability of the milk industry, since this product generates the highest income to the farmer.

Only 23% of all the meat consumed in Puerto Rico is produced locally. However, meat producers face common problems which affect the increase of the market: low efficiency and quality of production at the farm level and limited diversification of products to satisfy the needs of consumers. These problems are caused by limited control of imported products, and high costs of production per unit of product, especially land and feed. Such problems need to be addressed in order to compete with imported products.

On the other hand, the local animal production system could become non sustainable in the long run faced with the realities of high levels of nutrient excretion, the limited amount of land for forage production, and concentrated manure disposition. Eventually, if unattended, such a system can lead to the pollution of streams, estuaries, and groundwater resources. Therefore, it is crucial for the long-term sustainability of the system to reduce surplus nutrient excretion and to increase recycling of nutrients on the farm by increasing the efficiency of animal production.

A cost-effective agriculture also requires efficient engineering practices. The majority of the farms in Puerto Rico have structures that form part of their infrastructure. Biological systems compose most of the waste management, recycling, and reuse operations in farms with animals in confinement. The Engineering and Biosystems program seeks to improve existing structures and to provide farmers with model plans that comply with permits requirements. Through this program, PRAES helps farmers with animals in confinement to prepare waste management systems that meet state and federal requirements. In the area of irrigation and drainage, most of our efforts are geared toward the effective operation and maintenance of the equipment and water conservation.

Crop production is the second most important economic area of Puerto Rico's agriculture. In 2006 2007 the value of crop production was \$331,689,000 (preliminary data PRDA), an increase of \$4.3 million as compared to 2005 2006 with \$327,362,000 (revised data PRDA). The crop commodities include fruit (mango, avocado, pineapple, oranges, papaya, Spanish lime, Rambutan, other citrus and fruit), vegetable crops (tomatoes, peppers, sweet peppers, onions, pumpkin, aromatic herbs, and others), starchy crops (yams, taniel, cassava, and others), ornamentals (flowering plants, cut flowers, interior and exterior foliage plants, and landscaping), coffee, bananas, and plantains. Most of the farms are small or medium sized and owner operated. Their main crop production problems are product quality and the poor use of adequate crop cultivation practices. An economically profitable and progressive agriculture requires efficient plant management and good pre and post harvesting management practices of products to obtain excellent quality and better utilities.

New technological practices and product quality innovations with GAP's are essential for farmers to survive in the new global agriculture. Farmers should be educated to change production practices from craft production practices to new efficient ones. Such efforts will help farmers to achieve higher production, better crop varieties, extended harvest season, value-added, and improved quality to increase their profits.

The Crop Production program will make the Plant Product Quality and Utility and Plant Management Systems important key issues to the farmer's education program.

PRAES uses the Plant Protection program to manage, enhance, and implement integrated pest management (IPM) techniques. Its objectives are broad and may change in scope from year to year depending on the pest incidence. It includes all horticulture and agronomic plants of economic importance to Puerto Rico. Our plant protection educational programs promote the adoption of the best management practices to develop IPM systems that protect the environment, conserve the natural resources, and contribute to the competitiveness, profitability, and sustainability of Puerto Rico's agriculture. The objective is to develop integrated approaches to crop protection, minimizing the impact of pesticides on the environment. The Plant Protection program facilitates the coordination of work that includes diverse disciplines, organizations, and job functions (extension, teaching, research). It is the central point of contact for inquiries about integrated pest management, pesticide applicator training, and pesticide impact that enhances the visibility of the University of Puerto Rico -Mayaguez Campus' protection program.

Puerto Rico's high population density demands new infrastructure to satisfy its needs. This has resulted in a reduction of land available for agriculture; this squandering and urban development threatens our natural resources.

According to the 2002, Census of Agriculture 690,687 acres were dedicated to agricultural uses. Of these, 178,663 were improved pastures, 109,597 were nature pastures, and 64,963 abandoned pastures. Range and pasture production require better and more efficient use of our lands and farm animal production requires extensive, as well as intensive pasture lands for dairy and livestock production. Our main industries dairy and beef cattle as well as other emerging agricultural enterprises, such as horseback riding and "paso fino" horses, depend directly and indirectly on hay and range lands for grazing. Seventy-eight percent (78%) of livestock farmers depend on hay to feed their animals. The agricultural net income for hay and silage during 2004 2005 was \$8.9 million.

The Soil, Water, and Air program is devoted to promoting the education of farmers and people related with agriculture through activities addressed to establish conservation practices to protect the watersheds, increase appropriate fertilization practices, conserve water and mitigate emissions of particles from agricultural production to the air. We will also emphasize on better soil management on the flood plains, the recharge of groundwater, and new alternatives to ensure compliance of air and water quality regulations.

Although the Aqueduct & Sewer Agency provides most of the water that we consume, 300 communities are still operating their own drinking water systems. These systems extract the water from rivers, streams or groundwater. We need to develop a program that will encourage farmers to adopt practices to reduce the effect of residual fertilizers and conserve the quality of the water for farming and household uses. PRAES will offer technical assistance, conduct follow-ups to the producers, and visit the farms to ensure that the recommended practices are being implemented and working properly. The relation soil-plant-water-air will be analyzed to maintain a balance. In addition, educational material will be prepared to deliver the information to the farmers and collaboration with other agencies will strengthen the education.

## 2) FAMILY AND CONSUMER SCIENCES:

The family structure in Puerto Rico has changed with important implications for children. The issues that most concern policy makers and the public are the increasing number of single-parent families over the past three decades, and the increase in family violence, which affects the well being of our families and their members. It is important to develop educational programs to empower families to nurture, support, and guide their members throughout their lives and motivate them to improve their quality of life and well being. To reach this goal, the family life specialist develops programs facilitating strategic planning, workshops, curriculum, and trainings in successful parenting; character traits, clarification of values, family strengths, aging aspects, and life skills for families, children, youth, and elderly people. A special family project will be continued to help develop skills to change

behaviors and adopt practices to strengthen family relations and values.

Health and disease have been humanity's mayor concern since antiquity and; without doubt, people should be concerned about their health. However, despite its priority, they engage in behaviors that place them at risk of diseases. It is necessary to develop preventive educational programs targeted to children, youth, and families directing efforts towards the causes of the problems rather than their symptoms.

PRAES will continue working in different partnerships with health and human services agencies to focus on collaborative efforts on the development of programs aimed at the promotion of health and the prevention of disease. We will promote healthy lifestyles for people in both rural and urban areas and address high risk factors through the prevention and early detection of diseases, prevention of injuries and disabilities, and appropriate use of the health care system (promoting the development of self-care skills). Once the diverse needs of the general public are recognized, we will concentrate our efforts to train professionals, community leaders, and the public on decision-making related to health practices, including the importance of physical activity to prevent conditions related to the leading causes of death. The special project Promoting Healthy Lifestyles will target adult clients to educate and empower individuals and families to adopt healthy behaviors and lifestyles. A curriculum guide "Prevention of Injury Using Safety", which targets the adult population, was developed to prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives.

We will continue working in the Healthy Indoor Air for America's Homes project, which prepares individuals with skills to help them identify interior air contaminants, their sources, their effects on human health, and their mitigation. Youngsters will demonstrate the knowledge and skills acquired in this project through Indoor Air Quality 4 H competitions.

The basic issue in the area of nutrition education and behavior is developing a healthy, well nourished population within the income constraints of each participant. This issue relates to personal satisfaction in one's life, the reduction of the incidence of chronic diseases, and moderating the trends of increased obesity in the population. Current efforts to reduce the incidence of overweight and obesity are based on medical models developed over 50 years ago, and are aimed at weight control rather than health. The adequate health status issue based on nutritious food, adequate physical activity, and accepting one's body as beautiful, not health status based on a specific BMI; concerns individuals, households, communities, and society at large.

In Puerto Rico there are no statistics concerning the presence of an adequate food supply in households to last the entire month. Studies conducted by the Puerto Rico Department of the Family show that the funds provided by NAP are not sufficient to buy nutritious food for the whole month. In working with low-income populations, it is evident that there is a problem with the availability of foods in socially acceptable ways. Households with children in school have fewer problems because the children can have one to two meals at school; however, households with small children at home, or which consist of adults or have older children that are not in school, may be at high risk for food insecurity.

CDC statistics for Puerto Rico, 1996 (earliest date for which the statistics are available), indicate that the prevalence for overweight was 37.2 (34.6 39.8) with a prevalence of obesity of 16.8 (14.8 18.8). The analogous numbers for 2002 are: overweight 39.2 (37.6 41.5, and obesity 22.0 (20.4 23 5). Persons 18 to 34 have a lower prevalence of overweight and obesity than persons 35 and older. The prevalence of overweight is greater in males than in females, but the prevalence of obesity is similar.

Studies indicate that between 80% and almost 100% of people who lose weight regain it. An informal survey of PRAES county personnel indicates that between 90 and 95% of the people failed to maintain weight loss after two to five years. However, recent work show that the no diet approach (Health at Every Size) results in long term improved health in adults, although it was not associated with weight loss. Food related factors associated with overweight and obesity include: skipping breakfast, larger portion sizes, larger total amount of food served, high-fat-high-sugar diets, increased snacks, increased fruit juice consumption coupled with lower milk consumption, multi tasking while eating, parent-child interactions while the child is eating, eating at fast food establishments, and increased choice in the marketplace. Participation in physical activity was identified as an important factor in 1955, and was recently confirmed in the WIN the Rockies program.

To deal with these problems related to overweight and obesity we have developed the program Healthy: No matter what my size or income, which is based on the idea that a healthy body feels good and looks good, no matter what its size. The basic attitude to be developed is: "I inherited a unique, complex, and attractive body. I will make sure it is as healthy as possible." }

There is a safe food supply for Puerto Rico and the USA thanks to a coordinated system of inspection that watches the entrance, the production, and the distribution of foods. On the other hand, foodborne diseases pose a great public health problem. The CDC estimates that in the United States there are 76 million cases of foodborne disease annually and 325,000 hospitalizations and 5,000 deaths related to foodborne disease. In Puerto Rico, there were 36 outbreaks related to foodborne disease during 2004 and 29 cases of Hepatitis Type A, 690 cases of Salmonella, 9 cases of Shiguella, and 2 cases of E. coli 0157:H7 during 2005 (Statistics, Puerto Rico Department of Health).

Research ([fsis.usda.gov/OA/rePRAESrch](http://fsis.usda.gov/OA/rePRAESrch)) reveals that, although American consumers are more knowledgeable about food safety, they may have erroneous ideas of which practices are effective to reduce foodborne disease at the home environment.

During the past decade, Federal and State agencies have developed new laws and regulations bringing to the attention of the mass media problems that have existed and had not been given the relevance that they have on public health.

PRAES' priority is to offer the Food Safety Certification Course (FSCC) to persons in charge of retail food establishments. The major difference between outbreak and non-outbreak restaurants is the presence of a certified kitchen manager, (Hedberg, C. W., et al., 2006). According to Green, food workers are more likely to wash their hands when they have received food safety training (Green, L.G., et al., 2007). In another study, some food workers reported that they did not use a food thermometer to check the doneness of cooked foods (Green et al., 2005). The Food Code provides recommended cooking temperatures to ensure that food reaches a temperature high enough to kill pathogens.

Professional personnel in charge of applying and supervising the procedures and practices related to food safety regulations in High Risk population establishments are required to prepare and serve food using HACCP Principles. PRAES' priority is to continue offering formal education to professionals that teach or enforce compliance regulations.

Puerto Rico has a population of 3,808,610 people (2000 US Population Census); an absolute increase of approximately 1.1 million people over the past 30 years. Families with both parents present comprise 68% of all families on the Island. Of this type of families, 31.4% live under the poverty level (income is less than \$10,000 per year). The total number of families with a woman as head of household (no man present) is 268,476. Of these families, 49.8% earn less than \$10,000/year.

During the past five years, the personal income increased from \$42 billion (2002) to \$50.9 billion (2006) and the personal consumer debt increased from \$17.1 billion to \$21.5 billion (Puerto Rico Planning Board). Family internal factors like unplanned spending and conspicuous consumption seem to worsen the personal debt. The Department of Labor and Human Resources recently concluded its Family Income and Expenses Study and its revision of the Shopping Basket of Goods and Services to be used in calculating the Consumer Prices Index (CPI). This CPI suggests that the rate of inflation was slightly more than 6% over the last 12 months (Progeso, 2007). Financial problems can cause negative impacts on individuals, families, and employers. Families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without adequate consumer education to help them consume in a rational way. The advertising and marketing industry aggressively seek to create perceived needs and desires in young people, individuals, families, and the general public (Kraack and Pelletier, 1998). While this occurs, personal savings of individuals and families drastically decrease putting them in a position of disadvantage in terms of their retirement savings or even to face a future emergency situation (Youn, Montalto, Hanna, 2006). Anderson (2004) found that low-income audiences, which are susceptible to lending predatory practices, don't like to prepare their own budget. Irrational decision-making, the inflationary process, and the lack of appropriate money management skills, constrains the consumers' income and spending patterns, forcing them to borrow. Consequently, consumers have a bad credit record. In addition, young individuals and couples lack good role models in financial matters and many employees are struggling with financial woes that threaten job productivity (Garman, 2005). This social panoramic view shows the increasing need to help consumers and households to deal effectively in a complicated economy through financial literacy and market understanding, giving them the appropriate tools for a better decision-making process. Financial education offered through PRAES' programs could help individuals to deal proactively with the following areas: marketing problems, resource management expenses tracking, budgeting, savings, investment, debt reduction, economic pressure, and wise credit card use.

### 3) FOUR H AND YOUTH DEVELOPMENT:

The primary audience of the 4-H and Youth Development program are children and youngsters between 5 to 19 years old. Due to the difference of age and diversity, their characteristics may vary according to their stage of development.

In the FY 2006-2007 Stakeholders' Input Process, the Youngsters selected the use of alcohol and drugs, sexuality, and criminality as the areas of most concern to them. During 2001-2002, there were a total of 1,872 school desertions at the intermediate and high school levels of an enrollment of 211,523 youngsters (approximately 1% of school deserters in relation to the total student population) (Department of Education, Area of Planning and Education Development, Statistics Division).

According to studies, there is a close relationship between school desertion and juvenile delinquency. One of these studies, by Dora Nevárez-Muñiz, is entitled Crime in Puerto Rico. The Administration for Mental Health and Addiction Control Services (ASSMCA, 2004) revealed that 56.9% of about 24,000 students at the elementary, intermediate, and high school levels from public and private schools drink alcohol; and the Alliance for a Puerto Rico without Drugs (2002-2004) indicated that alcohol was the substance mostly used among youngsters of the public school system. In the study 55.9% adolescents report having drunk alcohol at least once in their life time. A total of 933 cases of offences against society by these minors were reported by Puerto Rico's Assistant Police Superintendent for Citizen Services (Puerto Rico Police Statistics Division, 2004). Of these offences, 716 cases were drug related. Five thousand one hundred and sixty-eight (5,168) minors were intervened by the police in offences related to violence--not to sexual crimes, (Puerto Rico Police Statistics Division, 2003).

Another serious problem that may lead to school desertion is pregnancy among adolescents. During 2003-2004, there were

152 pregnant students at the intermediate level and 788 at the high school level (Department of Education). These data confirm the concerns of the youngsters consulted in the Stakeholders' Input Process (2003-2004).

Environmental Education, Leadership and Personal Development, Communication and Expressive Arts, Technology and Engineering were the areas that most interested the youngsters In the FY 2006-2007 Stakeholders' Input Process.

As the youngsters pointed out in these studies, it is important to have these needs dealt with. Attending these concerns will help make a more interesting and educational program, resulting in more participation. We should identify creative and innovative strategies to attain a combined balance between the themes of major interest pointed out by the youngsters and the mission of the 4-H Program. PRAES professionals will use the technical material to reach and satisfy other needs pointed out by the youngsters to develop values and life skills.

#### 4) COMMUNITY RESOURCE DEVELOPMENT:

Forty six per cent (46.1%) of the municipalities in Puerto Rico have from 50% to 59% of their families living below the standard definitions of poverty. The Special Communities Office of Puerto Rico (2001) developed social and economic studies in 686 special communities with a sample of 76,306 resident surveys. The study found that there are 138 outskirts, with 37.3% of the residents jacking property titles of their houses; 37% of the houses are built in wood, cement and zinc; 78.3% are unemployed persons, lacking security, public transportation and confronting social diseases such as use of alcohol and drugs.

The social and economic disadvantaged communities showed the a prevalence of the following indicators: school desertion; illiteracy (10%); families with only one person working; high unemployment rate; people with a lack of work skills; and lack of basic public services such as schools, post offices, and waste disposal management systems. There was also a total or partial absence of infrastructure and basic services like electricity, aqueducts, sewers, and recreational areas; and environmental problems. Other social problems such as addictions, security problems and domestic violence are endemic. Due to their low income, residents are forced to depend on government assistance (42.4% or 407,275 PAN families) to meet their nutritional needs.

The Community Resources Development Program focuses its efforts to attending the social and economically disadvantaged communities training leaders in community organizations and fostering empowerment and self management. Community development has been improving the social, economic, and environmental quality of live for individuals and families. The leadership developed in the communities contributes to civic engagement and healthy communities by promoting the interaction of community institutions, health and social services. It is a priority of the State to build a visionary, accountable and inclusive culture of civic decision making and problem solving ensuring strong human and social services to support individuals families and those in need; ensure public health and safety projects in the communities and help build strong community development programs, anchored in research, education and teaching their partners.

The Community Resources Planning and Development Program of the Agricultural Extension Service focuses in the delineation of an effective Community Economic Development Program that goes beyond training activities centered toward specific careers or job areas. Rather, it focuses in the identification and development of skills already present in the participants or the communities that might be geared toward activities of economic production, self-employment or the creation of micro-enterprises. Since agriculture represents 0.4% of the GNP (Gross National Product) in Puerto Rico (Government Development Bank, 2007), special emphasis will be given to the generation of sustainable low scale family or community-based agricultural initiatives. Accordingly, our program stresses the development of methodological tools that will allow participants with various and diverse talents, skills and dexterities to be able to organize economic activities that will allow them to take advantage of these skills for their benefit and subsistence.

#### Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2009	195.2	0.0	0.0	0.0
2010	195.2	0.0	0.0	0.0
2011	195.2	0.0	0.0	0.0
2012	195.2	0.0	0.0	0.0
2013	195.2	0.0	0.0	0.0

## II. Merit Review Process

### 1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel

### 2. Brief Explanation

The Merit Review process is conducted through four committees representing each of the four major programs: Agriculture, Marketing and Natural Resources; Family and Consumer Sciences; Four-H and Youth Development; and Community Resource Development. Each committee is composed of at least five members: Internal University members, which includes the program leader and two specialists (one from the Planning and Evaluation Office and one from the major subject area); and one faculty member from similar disciplines; and the external Non-University members representatives of the major government agencies or organizations that work with similar audiences. Members to the different committees include the Family and Consumer Sciences program (UPR), the director of Agricultural Education department (UPR-RUM), and the director of the Institute for Community Development (UPR), a researcher from the Agricultural Experiment Station, as well as representatives from the regional or state level of the Department of the Family, the Department of Education, the Governor's Office for Special Communities, the Governor's Office for Youth Issues, the Rural Development Corporation, the Farmers' Association, and the Farm Service Agency, among others. Each committee meets quarterly to evaluate the proposed plan of work for the year. External committee members evaluate the quality and relevance of the activities and programs to the State goals and offer recommendations in order to continue emphasizing critical areas already addressed in the program or to modify those areas that need to be improved. A written report is prepared at the end of each fiscal year by the program leader, in accordance with the committee members. The report describes how the committee's recommendations will be addressed.

## III. Evaluation of Multis & Joint Activities

### 1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Critical issues will be identified from several sources. Particularly, issues will be identified through the Stakeholder Input Process. They will also be identified by staff members at the state and local levels and through joint activities between the PR Agriculture Extension Service and PR Agricultural Experiment Station that are conducted for different commodities. Issues of strategic importance will be collected through collaborative and multidisciplinary efforts between the internal and the external linkages.

The identification of these critical issues has formed the basis for the revision and design of the new planned programs. Continuous revision of these issues will take place through periodic meetings with staff teams in charge of the Planned Programs in order to evaluate how these issues have been addressed and for new issues, identified educational strategies to attend those critical issues. Most of the educational strategies defined to address critical issues are the development of new and updated materials on the new topics and the establishment of special projects.

### 2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

PRAES planned programs are mainly designed to address the needs of various under-represented populations, particularly low income women, children, youth and families at risk, and small farmers, as well as homeless people. We continue to focus various educational efforts to attend the particular needs of the increasing population of adolescent mothers with planned programs in the areas of family, health, and resource management. PRAES has also placed special attention to the needs of the elderly population within the Families and Children planned program. Particular under-served and under-represented populations that PRAES is also targeting are the mentally challenged, as well as the jailed population that is soon to be out in the free community. Collaborative efforts with other state agencies have facilitated our strategies to reach these under-represented populations, as they refer some of this audience to us because of their high priority needs.

### 3. How will the planned programs describe the expected outcomes and impacts?

Planned programs describe the expected outcomes through the outcome indicators. Impacts of the planned program will be collected through Success Stories as well as Impact Statements.

#### 4. How will the planned programs result in improved program effectiveness and/or efficiency?

Planned programs are designed to address the needs of our populations. Educational techniques will be constantly evaluated to adapt to the skills levels of the participants and their educational needs, therefore, resulting in increased program effectiveness. Periodic meetings will also be conducted with staff teams to evaluate the effectiveness of their planned programs and identify strategies for improvement when needed. Multi-institutional and integrated activities will also contribute to achieve the goals of the planned programs.

### IV. Stakeholder Input

#### 1. Actions taken to seek stakeholder input that encourages their participation

- Targeted invitation to traditional stakeholder individuals

##### Brief explanation.

Stakeholders for the input process consist mainly of traditional participants or clientele of our programs who are members of the Local Advisory Committee. These clientele have vast experience in the four major Extension programs and include farmers, homemakers, youth, and key community leaders. One or two representatives of state agencies that work with similar clientele, who are also members of the Local Advisory Committees are invited to participate in the stakeholder input process.

#### 2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

##### 1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups

##### Brief explanation.

Stakeholders consist mainly of the local advisory committee members. Periodically, internal focus groups will be conducted with a sample of the committee members and other participants of our educational programs.

#### 2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

##### 1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder individuals
- Other (Focus group)

##### Brief explanation

Input from stakeholders is collected at the meetings conducted by the local advisory committees. Stakeholders are asked about the most critical issues affecting the different areas in our educational programs, including: agriculture, families, youth, and communities. They are also asked to help prioritize these issues. Focus groups will be conducted periodically at the state level with a representative sample of the committee members and other participants of our educational programs. A written report is prepared by the county agents in collaboration with the committee members and sent to the PRAES Planning and Evaluation Office at the State level.

#### 3. A statement of how the input will be considered

- To Set Priorities
- In the Action Plans
- In the Staff Hiring Process
- To Identify Emerging Issues
- Redirect Extension Programs

##### Brief explanation.

Input collected from the stakeholders are received at the state level and discussed at staff meetings with program leaders, the Planning and Evaluation Office, and the Associate Dean in order to set priorities for our programs. Data collected from

stakeholders will also be sent to the specialists, according to the area of needs. Needs related to the area of agriculture will be collected in a report to be sent to PRAES specialists that participate in the commodity joint meetings with the Agriculture Experiment Station. When there are issues which need to be emphasized, programs are redirected to address these issues. New emerging issues are identified through these processes and analyzed according to staff and resources available to address them; when needed, recommendations will be set for hiring staff. At the local level, input offered by the stakeholders is used to set priorities for their local plan of work.



## V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Human Health and Well-Being
2	Consumer Education and Individual and Family Resources Management
3	Food Safety Program
4	Strengthening Youth Life Skills, Leadership and their Community
5	Crop Production
6	Engineering and Biosystems
7	Families and Children
8	Empowering and Self-management Communities
9	Plant Protection
10	Soil, Water, and Air
11	Healthy: No matter what my size or income
12	Management of Rangeland and Forestry Resources
13	Animal Protection
14	Community Resources Development
15	Economics, Marketing and Policy
16	Animal Production

**V(A). Planned Program (Summary)****Program #1****1. Name of the Planned Program**

Human Health and Well-Being

**2. Brief summary about Planned Program**

Health and disease have been major concerns of humans since antiquity. However, despite its priority, people engage in behaviors that place them at risk of diseases. It is necessary to develop preventive educational programs targeted to children, youth, and families directs efforts toward causes of problems rather than their symptoms, which are risky behaviors. To reach this goal PRAES will continue working in different partnerships with health and human services agencies to focus on collaborative efforts on the development of programs aimed at promotion of health and prevention of disease. We will promote healthy lifestyles for people in both rural and urban areas, and address high risk factors through the prevention and early detection of diseases, the prevention of injuries and disabilities, and the appropriate use of the health care system (promoting the development of self-care skills). Once the diverse needs of the general public are recognized, we will concentrate our efforts to train professionals, community leaders, and the public on decision-making related to health practices, including the importance of physical activity to prevent conditions related to the leading causes of death. We will develop a special project targeted at adult clients to educate and empower individuals and families to adopt healthy behaviors and lifestyles. The project Promoting Healthy Lifestyles will encourage individuals and families to adopt healthy behaviors and lifestyles. A curriculum guide "Prevention of Injury Using Safety" (targeted to the adult population), was developed to prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives.

We will also continue working in the Healthy Indoor Air for America's Homes project, which prepares individuals with skills to help them identify interior air contaminants, their sources, their effects on human health, and their mitigation. Youngsters will demonstrate the knowledge and skills acquired in this project through Indoor Air Quality 4-H competitions.

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
724	Healthy Lifestyle	90%			
804	Human Environmental Issues Concerning Apparel, Textiles, and Res	10%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The general health status is the product of the influence of the general environment, genetics, and numerous specific risk factors associated to unhealthy behaviors, such as: cigarette smoking, physical inactivity, and unattended high blood pressure and diabetes. In 2005, 32.6% of Puerto Ricans adults reported that they engage 30+ minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20+ minutes three or more days per week (PRBRFSS, 2007). Obesity, which is caused by the interplay of a poor diet and the lack of sufficient physical activity, is another contributing factor associated with the

leading causes of death and a key factor in the development of Type 2 Diabetes. Using the weight classification by Body Mass Index (BMI) for 2006, 39.4% of the population was overweight and 24.7% is obese (PRBRFSS, 2007). The estimated prevalence of Diabetes Mellitus in 18 year olds and the older population increased from 8.5 in 2000 to 11.9 in 2006. This increment has been observed with age and in both genders, although in 2003 and 2004 women had a higher estimated prevalence than men. The majority of the people spend approximately 90% of their time indoors. This can be highly harmful to their health, if we consider the scientific evidence which indicates that toxic levels in air in interiors can be higher than the outdoor air in even the largest and most industrialized cities. The lung is the most common site of injury by airborne pollutants. Chronic respiratory diseases are the sixth leading cause of death in Puerto Rico. In 2004, there were a total of 1,211 deaths due to chronic respiratory diseases; this represents 4.0% of the total deaths (Department of Health, 2007). Accidents, the eighth cause of death (Health Department, 2007), are a significant threat to adults and older people, causing death and an extraordinary number of disabilities. There is some concern among policymakers about both the cost and health implications of overuse and inappropriate use of emergency rooms. A recent study made by the "Oficina de la Procuradora del Paciente" found that 64.3% of the persons that visited hospital emergency rooms brought major and minor medical problems, but no urgent conditions. People need to know how to identify the signs and symptoms that require a visit to the emergency room. The priority areas in the Health and Safety program are: to promote healthy lifestyles for people, address high risk factors, prepare individuals with skills that may help them identify interior air contaminants and mitigate them, and to encourage individuals to incorporate safety habits in their lives.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- Educating our PRAES agents and community leaders will help disseminate the information to the communities.
- Working in different partnerships with health and human services agencies to focus on collaborative efforts will help in the development of programs aimed at the promotion and prevention of health.
- Recent information related to medicine and health is available through the internet and PR Medical Science Campus, the State Department of Health (DOH), and other state agencies.
- Those individuals who show up for a course or enroll in a program are motivated to learn/change.
- The ability to learn is fundamental to the nature of humans, but there are individual differences between learners.

### 2. Ultimate goal(s) of this Program

- To promote healthy lifestyles for people by addressing high risk factors through the prevention and early detection of diseases.
- To prepare individuals and families to take the correct steps in case of an emergency and to encourage them to incorporate safety habits in their lives to reduce injuries.
- To prepare individuals with skills that may help them identify interior air contaminants, their sources, their effects on human health, and their mitigation to improve the quality of indoor air.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	5.1	0.0	0.0	0.0
2010	5.1	0.0	0.0	0.0
2011	5.1	0.0	0.0	0.0
2012	5.1	0.0	0.0	0.0
2013	5.1	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Conference/ training related to healthy lifestyle.
- Conference/ training related to diabetes.
- Conference/ training related to injury prevention .
- Conference/ training related to indoor air quality.
- Offer counseling in the areas of health and safety .
- Work in collaboration with the communication media.
- Prepare educational materials.
- Continue working in partnership with other agencies to develop educational programs.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Publications, Exhibitions)</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Families and children from low-income areas such as “Special Communities” (those identified by the governor’s office as being particularly vulnerable to social and economic problems), to educate them to adopt healthy lifestyle, and school age children to develop life skills in order to learn how to handle peer pressure and to adopt healthy lifestyles. Adolescents, using peer education strategy to promote sexual education among this group of age. Also, to prepared those with skills that may help them identify interior air contaminants, their sources, their effects on human health, and their mitigation. Individuals with an interest in the prevention or treatment of chronic diseases to help them use knowledge and skills to improve their personal health behaviors. Extension and other Professionals, train-the-trainer and in-service training

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	6000	5000	3000	1000
2010	6000	5000	3000	1000
2011	6000	5000	3000	1000
2012	6000	5000	3000	1000
2013	6000	5000	3000	1000

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0

2010 :0

2011 :0

2012 :0

2013 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

V(H). State Defined Outputs

1. Output Target

- Number of persons that completed non-formal health education and health promotion programs.

2009 :2500                      2010 :2500                      2011 : 2500                      2012 :2500                      2013 :2500

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons that reduced their risk levels upon the completion of one or more recommended practices on healthy lifestyles.
2	Number of persons that reduced their risk levels for a chronic disease upon the increase of physical activity in to their lifestyle.
3	Number of persons that detected and controlled indoor air contaminants in their homes.
4	Number of persons that acquired skills and modified attitudes and practices related to injury prevention.

**Outcome #1****1. Outcome Target**

Number of persons that reduced their risk levels upon the completion of one or more recommended practices on healthy lifestyles.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**1500**2010 :** 1500**2011 :** 1500**2012 :**1500**2013 :** 1500**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 724 - Healthy Lifestyle

**Outcome #2****1. Outcome Target**

Number of persons that reduced their risk levels for a chronic disease upon the increase of physical activity in to their lifestyle.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**900**2010 :** 900**2011 :** 900**2012 :**900**2013 :** 900**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 724 - Healthy Lifestyle

**Outcome #3****1. Outcome Target**

Number of persons that detected and controlled indoor air contaminants in their homes.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**400**2010 :** 400**2011 :** 400**2012 :**400**2013 :** 400**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

**Outcome #4****1. Outcome Target**

Number of persons that acquired skills and modified attitudes and practices related to injury prevention.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009 :**300**2010 :** 300**2011 :** 300**2012 :**300**2013 :** 300**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 724 - Healthy Lifestyle

## **V(J). Planned Program (External Factors)**

### **1. External Factors which may affect Outcomes**

- Competing Programatic Challenges
- Government Regulations
- Competing Public priorities
- Public Policy changes
- Economy
- Natural Disasters (drought,weather extremes,etc.)
- Populations changes (immigration,new cultural groupings,etc.)
- Appropriations changes

#### **Description**

Puerto Rico's location in the Caribbean area is subject to a variety of natural events, which include hurricanes with heavy winds, droughts, and heavy rainy seasons that can cause floods.

The government's inability to solve the problems related to the budget has the people feeling that we have an unstable economy. Because of this, we expect changes in the money assigned to government agencies and instrumentalities, as well as changes in public policies and regulations.

Sometimes the support needed from the Municipal government may vary if his/ her interests are different from those presented by the program. A project presented or on-going could be affected if, for any reason, the person responsible for the agency's administration changes. The same situation can occur if the community leaders are changed and the next ones are not interested in continuing with the education process.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- After Only (post program)
- Retrospective (post program)

#### **Description**

Different methods will be employed to evaluate changes in the participants. These methods will vary according to the curriculum used as some topics will be measured with post tests, pre/post test and other topics will be evaluated using a post retrospective test. These methods will be used to evaluate changes in knowledge and practices in a sample of the participants.

### **2. Data Collection Methods**

- Sampling
- Observation
- Tests

#### **Description**

Data will be collected in a sample of participants through different tests (pre/post, post, and retrospective tests) administered on-site. In addition, non-structured interviews will be used to have an indepth understanding of changes and the adoptionof practices int he participants.



**V(A). Planned Program (Summary)****Program #2****1. Name of the Planned Program**

Consumer Education and Individual and Family Resources Management

**2. Brief summary about Planned Program**

Families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without the adequate consumer education that helps them to consume in a rational way.

Financial education is an area that has gained interest among the public in recent years. Too many individuals and families are experiencing financial crisis because of inadequate savings, increasing debt, and lack of basic skills for a better financial decision-making.

The goal of the planned program Consumer Education and Individual and Family Resource Management is to increase the financial well-being of consumers through knowledge, skills, and self-confidence in competencies such as: how consumer behavior influences decision-making, budgeting, debt reduction, credit wise, savings, and investment. The program targets low-income families, new couples, 4-H members, undergraduate students, and employees from public and private sectors. Educational activities will include group workshops and individual counseling. The Behavior Change Theory, as well as the stages of change and the process of changes concepts, will be applied in the design of the curriculum. This will give participants the opportunity to think about different strategies to move ahead toward change in conduct patterns. Furthermore, social marketing and outreach activities, such as seminars, newsletters, radio programs, bulletin information center, will be employed to help individuals to foster the desired behavior change.

Efforts will be joined through the establishment of coalitions with other agencies in Puerto Rico, such as: Department of Consumer Affairs, Department of Education, Consumer Credit Counseling, IRS, The Cooperative League and the Puerto Rico Banks' Association, in order to work toward a successful consumer education program.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Medium Term (One to five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	20%			
801	Individual and Family Resource Management	80%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Puerto Rico has a population of 3,808,610 (2000 US Population Census); an absolute increase of approximately 1.1 million people over the past 30 years.

Families with both parents present comprise 68% of all families on the Island; 31.4% of these families live under the poverty level (income is less than \$10,000 per year). The total number of families whose head of household is a woman (no man present)

is 268,476; 49.8% of these families earn less than \$10,000/year.

During the past five years, the personal income increased from \$42 billion (2002) to \$50.9 billion (2006) and the personal consumer debt increased from \$17.1 billion to \$21.5 billion (Puerto Rico Planning Board). Family internal factors like unplanned spending and conspicuous consumption seem to worsen the personal debt.

The Department of Labor and Human Resources recently concluded its Family Income and Expenses Study and its revision of the Shopping Basket of Goods and Services to be used in calculating the Consumer Prices Index (CPI). This CPI suggests that the rate of inflation was slightly more than 6% over the last 12 months (Progeso, 2007).

Financial problems can cause negative impacts on individuals, families, and employers. Families are dealing in a complicated and aggressive world, where global marketing exposes them to irrational decision-making, conspicuous consumption, and faster economic resource exhaustion without adequate consumer education to help them consume in a rational way. The advertising and marketing industry aggressively seeks to create perceived needs and desires in young people, individuals, families, and the general public (Kraack and Pelletier, 1998). While this occurs, personal savings of individuals and families drastically decrease putting them in a position of disadvantage in terms of their retirement savings or even to face a future emergency situation (Youn, Montalto, Hanna, 2006).

Anderson (2004) found that low-income audiences, which are susceptible to lending predatory practices, don't like to prepare their own budget. Irrational decision-making, the inflationary process, and the lack of appropriate money management skills, constrains the consumers' income and spending patterns, forcing them to borrow. Consequently, consumers have a bad credit record. In addition, young individuals and couples lack good role models in financial matters and many employees are struggling with financial woes that threaten job productivity (Garman, 2005).

This social panoramic view shows the increasing need to help consumers and households to deal effectively in a complicated economy through financial literacy and market understanding, giving them the appropriate tools for a better decision-making process. Financial education offered through PRAES' programs could help individuals to deal proactively with the following areas: marketing problems, resource management expenses tracking, budgeting, savings, investment, debt reduction, economic pressure, and wise credit card use.

## **2. Scope of the Program**

- In-State Extension

## **V(D). Planned Program (Assumptions and Goals)**

### **1. Assumptions made for the Program**

In recent years the area of Financial Education has gained interest among the public. Too many individuals and families are experiencing financial crisis because of inadequate savings, an increasing debt, and the lack of basic skills for a better financial decision-making. According to Hogarth (2002), well educated consumers should make better decisions for their families, increasing their economic security and well-being. Also, secure families are better able to contribute to vital, thriving communities, further fostering community economic development.

Barheim, Garret, and Maki (2001) found that early exposure to financial concepts may increase comfort and familiarity with financial matters, thereby, removing psychological barriers that impede proper decision-making. On the other hand, Youn, Montalto and Hanna (2006) found that programs that enable households to identify savings goals and help them to adopt and implement savings rules that are manageable and easy to follow, will help households build wealth.

According to O'Neill (1999), an educational program used by many State Cooperative Extension workers as a method to increase the financial well-being of consumers was Money 2000. The most important find of this study was that those participants that paid more than the minimum balance due on credit cards, were more eager to make behavior changes, specifically on wise investment actions and setting financial goals. Utilizing the Transtheoretical Model of behavior change, individuals in the preparation and action stages of change will probably be more attracted to enroll in Money 2000 or other educational service programs than others that are not ready for change. O'Neill also found that marketing and outreach activities, such as seminars, newsletters, and websites can help individuals to foster the desired change in anticipation of the preparation stage.

Coalitions with other consumer agencies will be an important component for a successful consumer education program. Such agencies could be: the Department of Consumer Affairs, the Department of Education, the IRS, Consumer Credit Counseling, the Cooperative League, and the Puerto Rico Banks' Association.

### **2. Ultimate goal(s) of this Program**

To increase the financial well-being of consumers through knowledge, skills and self-confidence in competencies such as: how consumer behavior influences decision making, budgeting, debt reduction, credit wise, savings, and investment.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	8.7	0.0	0.0	0.0
2010	8.7	0.0	0.0	0.0
2011	8.7	0.0	0.0	0.0
2012	8.7	0.0	0.0	0.0
2013	8.7	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Curriculum and educational materials development
- Training the trainers
- Workshops
- Establishment of collaborations
- Consulting
- Media programs
- Exhibitions (Billboards in malls and public places with informative brochures and other educational material)

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Education Class</li> <li>● Demonstrations</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Radio Program)</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

New couples, individuals, low-income families, Extension professionals, personnel from other State agencies.

**V(G). Planned Program (Outputs)****1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	3400	2500	1000	200
2010	3600	3000	1000	200
2011	4000	3500	1200	250
2012	4000	4000	1400	300
2013	4500	4500	1600	350

## 2. (Standard Research Target) Number of Patent Applications Submitted

### Expected Patent Applications

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

## 3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

## V(H). State Defined Outputs

### 1. Output Target

- Total number of consumers that completed the Consumer Education Course.

2009 :550                      2010 :575                      2011 :600                      2012 :600                      2013 :650

- Total number of consumers that completed individual and family resource management course.

2009 :350                      2010 :375                      2011 :400                      2012 :400                      2013 :450

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Total number of consumers that adopted the practice of preparing their individual or family budget (Family Resource Management)
2	Total number of consumers that adopted practices to reduce debt.(Family Resource Management)
3	Total number of consumers that adopted practices on how to save.(Family Resource Management)
4	Number of consumers that opened a savings account or deposit frequently into savings account. (Family Resource Management)
5	Number of consumers that improved their financial well-being.
6	Total number of consumers that acquired knowledge about consumption decision-making process (Consumer Education course)
7	Total number of consumers that adopted savings practices through goods and services selection process. (Consumer Education course)
8	Total number of consumers that acquired knowledge about saving. (Family Resource Management)
9	Total number of consumers that established financial goals (Family Resource Management)
10	Total number of consumers that improved financial decision-making. (Consumer Education course)

**Outcome #1****1. Outcome Target**

Total number of consumers that adopted the practice of preparing their individual or family budget (Family Resource Management)

**2. Outcome Type :** Change in Action Outcome Measure

2009 :200                      2010 : 225                      2011 : 250                      2012 :275                      2013 : 300

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #2****1. Outcome Target**

Total number of consumers that adopted practices to reduce debt.(Family Resource Management)

**2. Outcome Type :** Change in Action Outcome Measure

2009 :200                      2010 : 225                      2011 : 250                      2012 :275                      2013 : 300

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #3****1. Outcome Target**

Total number of consumers that adopted practices on how to save.(Family Resource Management)

**2. Outcome Type :** Change in Action Outcome Measure

2009 :350                      2010 : 375                      2011 : 400                      2012 :450                      2013 : 475

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #4****1. Outcome Target**

Number of consumers that opened a savings account or deposit frequently into savings account. (Family Resource Management)

**2. Outcome Type :** Change in Action Outcome Measure

2009 :75                      2010 : 100                      2011 : 125                      2012 :150                      2013 : 175

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #5****1. Outcome Target**

Number of consumers that improved their financial well-being.

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :75                      2010 : 80                      2011 : 100                      2012 :125                      2013 : 150**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #6****1. Outcome Target**

Total number of consumers that acquired knowledge about consumption decision-making process (Consumer Education course)

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :0                      2010 : 0                      2011 : 0                      2012 :0                      2013 : 0**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 607 - Consumer Economics

**Outcome #7****1. Outcome Target**

Total number of consumers that adopted savings practices through goods and services selection process. (Consumer Education course)

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :450                      2010 : 475                      2011 : 500                      2012 :525                      2013 : 550**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management

**Outcome #8****1. Outcome Target**

Total number of consumers that acquired knowledge about saving. (Family Resource Management)

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :**0                      **2010 :** 0                      **2011 :** 0                      **2012 :**0                      **2013 :** 0

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #9****1. Outcome Target**

Total number of consumers that established financial goals (Family Resource Management)

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :**250                      **2010 :** 275                      **2011 :** 300                      **2012 :**325                      **2013 :** 350

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**Outcome #10****1. Outcome Target**

Total number of consumers that improved financial decision-making. (Consumer Education course)

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :**300                      **2010 :** 325                      **2011 :** 350                      **2012 :**375                      **2013 :** 400

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 607 - Consumer Economics

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Competing Public priorities

**Description**

Goal enhancement could be affected by external elements, such as rivalry with other public priorities and other programmatic challenges. Said situation could realign human and fiscal resources to those other priorities, reducing the potential effectiveness of the proposed program.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)
- Before-After (before and after program)

**Description**

A retrospective or a before-after evaluation will be used depending on the ages of the participants.



## 2. Data Collection Methods

- On-Site
- Sampling

### Description

On-site surveys will be administered to a sample of participants to measure changes in practices after participating in the program. Instruments will be developed and pilot tested during the first phase of the evaluation process.

**V(A). Planned Program (Summary)****Program #3****1. Name of the Planned Program**

Food Safety Program

**2. Brief summary about Planned Program**

The goal of the Food Safety program is "To improve food safety through the control, reduction or elimination of contamination risks". Its main components are the following: A) The "Fight BAC!" campaign, for consumers; B) The Food Safety Certificate course, for persons in charge of food establishments; and C) Train-the-trainers, for university personnel and professionals from other government agencies and organizations.

The Fight BAC! campaign is the consumer educational strategy promoted by the National Initiative, "From Farm to Table". The Puerto Rico Agricultural Extension Service (PRAES) adapted it to the Puerto Rican consumers, considering socioeconomic and cultural factors that influence their food handling practices. PRAES has three curriculums: 1. Fight BAC!, maintain food free from bacterias; 2. Preparation of nutritional safe recipes; and 3. Protect your baby.

The Food Safety course includes 13 lessons that facilitate the training of the persons in charge of food establishments in the FDA 2005 Food Code regulations: 17 knowledge areas (2-102.11), the responsibilities (FC 2-101.11, 2-103.11) and Hazard Analysis and Critical Control Points (HACCP). This course includes the certification test of knowledge that is required by the Puerto Rico Department of Health.

Train-the-trainers for PRAES personnel, includes trainings on the curriculums developed for their clientele and their professional continuing education. PRAES maintains coordination with Federal and State government agencies in their common goal to improve food safety. PRAES has a protagonist roll in the Puerto Rico Partnership for Food Safety Education (PRPFSE), which groups representatives of regulatory agencies and the ones that serve people-at-risk. PRPFSE designs and offers trainings to professional personnel, promotes the collaboration of private and public institutions, and delivers education to the respective clientele. Educational activities are developed and celebrated during September, "Month of Food Safety Education".

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
712	Protect Food from Contamination by Pathogenic Microorganisms, Pa	100%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The food supply for Puerto Rico and the USA is safe thanks to a coordinated system of inspection that watches the entrance, production, and distribution of foods.

Foodborne disease are a great public health concern. According to the CDC, in the United States there are an estimated 76 million cases of foodborne disease, 325,000 hospitalizations and 5,000 deaths each year. There were 36 outbreaks related to foodborne illnesses in Puerto Rico (Puerto Rico Health Department, Statistics of 2004). In 2005, there were 69 cases of Hepatitis Type A, 690 cases of Salmonella, 9 cases of Shigella, and 2 cases of E. Coli 0157:H7.

Research (<http://fsis.gov/OA/rePRAESrch>) reveals that American consumers are more knowledgeable about food safety, but may have erroneous ideas of which handling practices are effective to reduce foodborne illnesses at a home environment. During the past decade, Federal and State agencies developed new laws and regulations bringing to the attention of the mass media problems that have existed and had not received the relevance that they have on public health.

The major difference between restaurants with foodborne disease outbreaks and restaurants with non-outbreaks is the presence of a certified kitchen manager, (Hedberg, C. W., et al., 2006). It was found that food workers are more likely to wash their hands when they have received food safety training (Green, L.G., et al., 2007). Also, some food workers reported that they did not use a food thermometer to check the doneness of cooked foods (Green et al., 2005). The Food Code provides recommended cooking temperatures to ensure that food reaches a temperature high enough to kill pathogens. Professional personnel in charge of applying and supervising the procedures and practices related to food safety regulations in High Risk population establishments are required to prepare and serve food using HACCP Principles. PRAES' priorities are to offer the Food Safety Certification Course (FSCC) to persons in charge of retail food establishments and to continue offering formal education to professionals that teach or enforce compliance regulations.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- 1) Consumers - PRAES has 60 home economists that utilize three Fight BAC! courses, using three types of approaches according to the variety of clientele we attend. The curriculums have been prepared and validated to meet Puerto Rico's idiosyncrasy.
- 2) Persons in charge of retail food establishments - In the year 2000, the Puerto Rico Department of Health adopted the Food Code to regulate and inspect retail food establishments. This regulation demands that the person in charge have food safety knowledge. PRAES offers FSCC, which includes the 17 areas of knowledge and the 13 duties assigned by the regulation.
- 3) PRAES and personnel from other agencies - PRAES is an active member of the Puerto Rico Partnership for Food Safety Education, which discusses food safety public policy and makes agreements to enforce the Food Code and other related regulations.

### 2. Ultimate goal(s) of this Program

To improve food safety handling practices through the control, reduction or elimination of contamination risks.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	8.4	0.0	0.0	0.0
2010	8.4	0.0	0.0	0.0
2011	8.4	0.0	0.0	0.0
2012	8.4	0.0	0.0	0.0
2013	8.4	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

For consumers

- Fight BAC! Courses: The teaching field personnel will select a minimum of four lessons out of eight available based on the

needs of consumers.

- Protect your baby curriculum: This curriculum includes a four lesson flip chart and brochures, addressed to pregnant women and mothers of infants.
- Course and competition Nutrition and Innocuous recipes: This curriculum includes 1) Developing nutritious & innocuous recipes 2) Steps in preparing innocuous recipes and, 3) Puerto Rico Pyramid and competition on the preparation of original nutritional and innocuous recipes.
- Exhibitions, information centers, radio shows, among others.

Persons in charge (PIC) of Food Establishments

- Continue training and coordination using Home Economists to 13 lesson Food Safety Course.  
PRAES and personnel of other agencies
- Trainings: Emphasis on institutions that serve At-Risk Population in the Food Code regulations, Hazard Analysis and Critical Control Points, Food Defense, and others.

## 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Group Discussion</li> <li>● Workshop</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Radio talk shows)</li> <li>● Other 2 (Newspaper articles)</li> </ul>

## 3. Description of targeted audience

Fight BAC courses: Consumers, emphasizing At-Risk Population

Food Safety Course: Persons in Charge (PIC) of Retail Food Establishments including school lunch program, child and elderly day care centers, among others.

Training and specialized advising to professionals: Specialists, home economists and agricultural agents; institution administrators that work for At-Risk Population; environmental health inspectors, nutritionists, agronomists, health educators, and others.

Professionals from the PR Food Safety Education Partnership.

## V(G). Planned Program (Outputs)

### 1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	10100	2500	0	0
2010	10100	2500	0	0
2011	10100	2500	0	0
2012	10100	2500	0	0
2013	10100	2500	0	0

### 2. (Standard Research Target) Number of Patent Applications Submitted

#### Expected Patent Applications

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of consumers completing one educational curriculum.

**2009 :1000****2010 :1000****2011 : 1000****2012 :1000****2013 :1000**

- Number of participants that completed Food Safety course.

**2009 :2500****2010 :2500****2011 : 2500****2012 :2500****2013 :2500**

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of consumers that adopted one or more food handling practices.
2	Number of participants that approved the certification exam.
3	Number of participants that wrote a plan to control the temperatures in potentially hazardous foods.
4	Number of participants that adopted 15 or more of 20 selected food handling practices recommended by the Food Code.

**Outcome #1****1. Outcome Target**

Number of consumers that adopted one or more food handling practices.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :1000**2010** : 1000**2011** : 1000**2012** :1000**2013** : 1000**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

**Outcome #2****1. Outcome Target**

Number of participants that approved the certification exam.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009** :2500**2010** : 2500**2011** : 2500**2012** :2500**2013** : 2500**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

**Outcome #3****1. Outcome Target**

Number of participants that wrote a plan to control the temperatures in potentially hazardous foods.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :1500**2010** : 1500**2011** : 1500**2012** :1500**2013** : 1500**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

**Outcome #4****1. Outcome Target**

Number of participants that adopted 15 or more of 20 selected food handling practices recommended by the Food Code.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :1700**2010** : 1700**2011** : 1700**2012** :1700**2013** : 1700**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Economy
- Natural Disasters (drought, weather extremes, etc.)
- Government Regulations

**Description**

Puerto Rico is in a high risk area for hurricanes, especially between the months of July and November. After a disaster, the risks of contracting foodborne illnesses will increase due to floods, interruption of electricity and contaminated water. The interruption of electricity and water services has become a common issue, which requires constant education about the additional practices that the whole population has to carry out to maintain safe food and water. Persons in charge of food establishments will be caught up in trying to reestablish business and with receiving visits from the Inspectors from the Health Department. Due to lack of water service and electricity, consumers will be more focused on assisting their family needs. During these situations, PRAES personnel focuses on education through mass media with literature prepared about food handling during emergencies.

Puerto Rico's economy has been affected by the increase in prices of petroleum products and sales tax laws. These changes have affected businesses in general because consumers are not eating out as often and operational costs have gone up. Some food establishments have gone out of business.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Before-After (before and after program)
- After Only (post program)

**Description**

Persons in charge will be tested in order to identify knowledge increase. They will also complete a questionnaire to identify before and after food safety handling practices.

**2. Data Collection Methods**

- Whole population
- Other (questionnaire)
- Tests

**Description**

To collect data on the pre/post evaluation, for each course, a questionnaire will be administered on-site to determine adoption of food handling practices by the participants. These will be administered to the population attending each course. Data is reported on the information Electronic Reporting System for PRAES. For the Food Safety Course, all participants will complete a final examination. Certification granted to all participants obtaining a score of 70% or more.



**V(A). Planned Program (Summary)****Program #4****1. Name of the Planned Program**

Strengthening Youth Life Skills, Leadership and their Community

**2. Brief summary about Planned Program**

Today's children and youth face a diversity of social problems that can result in risky behavior when kids are poorly equipped with the necessary skills to avoid them. The use and abuse of substances is a major social-medical problem of great impact in the adolescent and young adult population of Puerto Rico. An estimated three quarters of Puerto Rican students have consumed some alcohol in their life time and one third of them have used cigarettes. Studies indicate that this can be translated, in many occasions, in school absenteeism, poor academic progress, in physical and emotional change, being sexually active without any responsibility, and poorly accepted social behavior. All children and youth experience some degree of risk as they progress from birth to adulthood, but an increasing amount of children are at a substantially higher risk for negative outcomes. These children and youth do not have the advantages that promote an optimum, healthy development of the body, mind, and spirit; and many do not have opportunities to experience positive stimulation for growth or nurturing support from their family, friends and community.

The Puerto Rico 4-H and Youth Development Program has identified Youth Development as a mayor emphasis area for its long range educational program. This area is designed to provide youth with positive opportunities to learn and interact with peers and adults, provide leadership development, and focus on the enhancement of life skills through research-based educational programs. It focuses on Healthy Lifestyles, Science, Engineering and Technology, Civic and Leadership. Different activities and methods will be used, such as: camps, competitions, meetings, demonstrations, and workshops; but, especially, the development of projects as a strategic learning tool. Learning experiences in-service to give youngsters the opportunity for reflection and action about issues that impact will also be promoted. Youngsters will acquire and develop life skills in order to identify the most important issues within a real world situation through critical thinking, generate emotional consequences, which challenge values and ideas, and support social, emotional and cognitive learning and development. The development of life skills for the prevention of negative high risk conduct will be emphasized in this program.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The primary audience of the 4-H and Youth Development program are children and youngsters between 5 to 19 years old. Due to the difference of age and diversity, their characteristics may vary according to their stage of development.

In the FY 2006-2007 Stakeholders' Input Process, the Youngsters selected the use of alcohol and drugs, sexuality, and criminality as the areas of most concern to them. During 2001-2002, there were a total of 1,872 school desertions at the intermediate and high school levels of an enrollment of 211,523 youngsters (approximately 1% of school deserters in relation to the total student population) (Department of Education, Area of Planning and Education Development, Statistics Division).

According to studies, there is a close relationship between school desertion and juvenile delinquency. One of these studies, by Dora Nevárez-Muñiz, is entitled Crime in Puerto Rico. The Administration for Mental Health and Addiction Control Services (ASSMCA, 2004) revealed that 56.9% of about 24,000 students at the elementary, intermediate, and high school levels from public and private schools drink alcohol; and the Alliance for a Puerto Rico without Drugs (2002-2004) indicated that alcohol was the substance mostly used among youngsters of the public school system. In the study 55.9% adolescents report having drunk alcohol at least once in their life time. A total of 933 cases of offences against society by these minors were reported by Puerto Rico's Assistant Police Superintendent for Citizen Services (Puerto Rico Police Statistics Division, 2004). Of these offences, 716 cases were drug related. Five thousand one hundred and sixty-eight (5,168) minors were intervened by the police in offences related to violence—not to sexual crimes, (Puerto Rico Police Statistics Division, 2003).

Another serious problem that may lead to school desertion is pregnancy among adolescents. During 2003-2004 there were 152 pregnant students at the intermediate level and 788 at the high school level (Department of Education). These data confirm the concerns of the youngsters consulted in the Stakeholders' Input Process (2003-2004).

Environmental Education, Leadership and Personal Development, Communication and Expressive Arts, Technology and Engineering were the areas that most interested the youngsters In the FY 2006-2007 Stakeholders' Input Process.

As the youngsters pointed out in these studies, it is important to have these needs dealt with. Attending these concerns will help make a more interesting and educational program, resulting in more participation. We should identify creative and innovative strategies to attain a combined balance between the themes of major interest pointed out by the youngsters and the mission of the 4-H Program. PRAES professionals will use the technical material to reach and satisfy other needs pointed out by the youngsters to develop values and life skills.

## **2. Scope of the Program**

- In-State Extension

## **V(D). Planned Program (Assumptions and Goals)**

### **1. Assumptions made for the Program**

- When we work in an integral form, respecting the competency and potential of each participant, there is a great amount of motivation and disposition on behalf of the youngsters to learn and participate in 4-H, scholastic, and community activities.
- The experiences learning-to-know, learning-to-make, learning-to-be and learning-to-live, according to John Dewey's philosophy, have been extensively used by the 4-H program "Learning-by-doing".
- There are 1,481 adult volunteers offering support to the 4-H Program working with youngsters in different activities (Youth Enrollment Report 2007).
- Life skills prepare people to be successful in life. The goal is that every person learn the necessary skills to succeed.
- Life skills are tools that help people to cope with whatever life brings. When integrated into curriculum development, life skills determine how subject matter content is delivered and practiced, when a learner is engaged in an educational activity. Life skills are useful long afterwards in other life situations.
- We depend on a dedicated staff that acknowledges the mission of the 4-H Program to address youth needs.

### **2. Ultimate goal(s) of this Program**

Increase the number of youngsters that have improved their life skills for better decision making in life.

## **V(E). Planned Program (Inputs)**

### **1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	41.8	0.0	0.0	0.0
2010	41.8	0.0	0.0	0.0
2011	41.8	0.0	0.0	0.0
2012	41.8	0.0	0.0	0.0
2013	41.8	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Conferences or workshops training in life skills, leadership, and community services.
- Camping and outdoor activities.
- Curriculum developed in life skills, leadership and community service.
- Participate in mass communication to promote 4-H as a positive organization for youth.
- Projects where youth and adults volunteers can develop skills that will enable them to make a positive contribution to society.
- Competitive activities/events.
- Non-competitive activities/events.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Demonstrations</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Exhibitions)</li> </ul>

**3. Description of targeted audience**

Youth and 4-H members, Extension professionals, professional government personnel, volunteers, and community residents.

**V(G). Planned Program (Outputs)****1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	8000	0	50000	20000
2010	8000	0	50000	20000
2011	8000	0	50000	20000
2012	8000	0	50000	20000
2013	8000	0	50000	20000

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of training and workshops in life skills and subject matter.

**2009 :700                      2010 :800                      2011 :900                      2012 :900                      2013 :950**

- Number of children/ youth who participated in competitive activities.

**2009 :1000                      2010 :1000                      2011 :1000                      2012 :1000                      2013 :1000**

- Number of children/ youth who participated in non competitive activities.

**2009 :5500                      2010 :5500                      2011 :6000                      2012 :6000                      2013 :6050**

- Number of children/ youth who participated in life skills and subject matter educational programs designed to teach basic life skills.

**2009 :5000                      2010 :5000                      2011 :5000                      2012 :5000                      2013 :5100**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Number of children/youth who demonstrated improved decision making skills.
2	Number of children/youth who demonstrated improved communication skills.
3	Number of children/youth who assumed leadership roles.
4	Number of children/youth who demonstrated improved conflict management skills.
5	Number of children/youth who demonstrated improved planning and organization skills.
6	Number of youth volunteers conducting community service learning projects.
7	Number of children/youth who demonstrated improved self-esteem skills.
8	Number of children/youth who demonstrated improved teamwork skills.
9	Number of children/youth who demonstrated improved healthy life-style choices skills.
10	Number of children/youth who demonstrated improved service learning skills.

**Outcome #1****1. Outcome Target**

Number of children/youth who demonstrated improved decision making skills.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**1500**2010 :** 1600**2011 :** 1700**2012 :**1800**2013 :** 1900**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #2****1. Outcome Target**

Number of children/youth who demonstrated improved communication skills.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**1500**2010 :** 2000**2011 :** 2500**2012 :**2800**2013 :** 3000**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #3****1. Outcome Target**

Number of children/youth who assumed leadership roles.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**350**2010 :** 500**2011 :** 1000**2012 :**1000**2013 :** 1200**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #4****1. Outcome Target**

Number of children/youth who demonstrated improved conflict management skills.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**1300**2010 :** 1350**2011 :** 1400**2012 :**1450**2013 :** 1500**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #5****1. Outcome Target**

Number of children/youth who demonstrated improved planning and organization skills.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :2000                      **2010** : 2600                      **2011** : 2800                      **2012** :3000                      **2013** : 3200

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #6****1. Outcome Target**

Number of youth volunteers conducting community service learning projects.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :275                      **2010** : 275                      **2011** : 300                      **2012** :300                      **2013** : 325

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #7****1. Outcome Target**

Number of children/youth who demonstrated improved self-esteem skills.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :800                      **2010** : 850                      **2011** : 900                      **2012** :1000                      **2013** : 1100

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #8****1. Outcome Target**

Number of children/youth who demonstrated improved teamwork skills.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :800                      **2010** : 900                      **2011** : 1000                      **2012** :1100                      **2013** : 1200

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #9****1. Outcome Target**

Number of children/youth who demonstrated improved healthy life-style choices skills.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :800                      **2010** : 900                      **2011** : 1000                      **2012** :1100                      **2013** : 1200

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**Outcome #10****1. Outcome Target**

Number of children/youth who demonstrated improved service learning skills.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :600                      **2010** : 650                      **2011** : 700                      **2012** :750                      **2013** : 800

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 806 - Youth Development

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Competing Programatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes

**Description**

The Island's location in the Caribbean area put it in the area of tropical hurricanes with heavy winds and heavy rains which cause floods. The people feel that we have an unstable economy, because of the government's inability to solve its budget problems. We expect that there may be changes in the budget assigned to government agencies and changes in public policy

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Before-After (before and after program)
- Retrospective (post program)

**Description**

This planned program focuses on the development of youth life skills, therefore the evaluation plan for this and the coming years will focus on the development of instruments to measure different life skills in the 4Hers. Once validity and reliability of instruments is measured, the instruments will become part of the program's outcome evaluations in order to measure changes and improvements in life skills developed during the different educational activities of the 4-H program. Depending on the activity being evaluated and the ages of the 4-H members, the evaluation would be retrospective or before and after program.

**2. Data Collection Methods**

- Sampling
- On-Site



**Description**

On site surveys will be conducted to measure specific life skills with a sample of the participants.

**V(A). Planned Program (Summary)****Program #5****1. Name of the Planned Program**

Crop Production

**2. Brief summary about Planned Program**

An economically profitable and progressive agriculture requires efficient plant management and good pre-harvesting management practices of products to obtain excellent quality and better utilities. New technological practices and product quality innovations are essential for farmers to survive in the new global agriculture. The Crop Production program seeks ways to improve the use of improved production practices and Good Agricultural Practices (GAP) to provide farmers with better growth management systems. Our efforts are geared toward the effective production of our crop commodities and improved product quality.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)	30%			
205	Plant Management Systems	70%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Crop production is the second most important economic area of Puerto Rico's agriculture. In 2006-2007 the value of crop production was \$331,689,000 (preliminary data PRDA), an increase of \$4.3 million as compared to 2005-2006. The crop commodities include fruit (mango, avocado, pineapple, oranges, papaya, Spanish lime, Rambutan, other citrus and fruit), vegetable crops (tomatoes, peppers, sweet peppers, onions, pumpkin, aromatic herbs, and others), starchy crops (yams, taniar, cassava, and others), ornamentals (flowering plants, cut flowers, interior and exterior foliage plants, and landscaping), coffee, bananas, and plantains. Most of the farms are small or medium sized and owner operated. Their main crop production problems are product quality and the poor use of adequate crop cultivation practices. An economically profitable and progressive agriculture requires efficient plant management and good pre- and post-harvesting management practices of products to obtain excellent quality and better utilities.

New technological practices and product quality innovations with GAP's are essential for farmers to survive in the new global agriculture. Farmers should be educated to change production practices from craft production practices to more efficient ones. Such efforts will help them to achieve higher production, better crop varieties, extend the harvest season, value-added, and improve quality to increase their profits.

The Crop Production program will make the Plant Product Quality and Utility and Plant Management Systems important key issues to the farmer's education program.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

Our experience with crop production programs shows that farmers are motivated by economic government incentives and high product prices. In the past six months the Puerto Rico Department of Agriculture announced a reduction in crop production incentives. It is important to move the farmers to be competitive with better and more cost effective plant management practices to increase the production, quality, and utility of their products. With better management, good quality and different product uses, the products can be sold in different market places. Different product uses (value-added) and high quality are essential to sell products to niche markets like hotels, restaurants and cruise lines that pay high prices for products of better quality.

**2. Ultimate goal(s) of this Program**

To improve product quality, increase production and competitiveness through the use of the most effective management system practices, new varieties, and good agricultural practices.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	18.2	0.0	0.0	0.0
2010	18.2	0.0	0.0	0.0
2011	18.2	0.0	0.0	0.0
2012	18.2	0.0	0.0	0.0
2013	18.2	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Conduct production trainings.
- Farmers visits and guidance.
- Conduct farmers' meetings.
- Collaborate with local government agencies (Departments of Agriculture and Environmental and Natural Resources) and USDA (NRCS and others) .
- Prepare cultivation practices plan.
- Prepare products quality improvement plan.
- Distribute publications.
- Prepare crop production publications.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Other 1 (Telephone Calls and Email)</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Publications, Exhibitions)</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Newsletters</li> </ul>

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>● Group Discussion</li> <li>● Demonstrations</li> </ul> | <ul style="list-style-type: none"> <li>● TV Media Programs</li> </ul> |
|--|---|

**3. Description of targeted audience**

The crop production program's target audience consists of farmers, government professionals, county agents, USDA professionals, products distributors, and professionals from the private sector.

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	5000	3000	0	0
2010	5000	3000	0	0
2011	5000	3000	0	0
2012	5000	3000	0	0
2013	5000	3000	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	4	4
2010	0	4	4
2011	0	3	3
2012	0	4	4
2013	0	3	3

**V(H). State Defined Outputs****1. Output Target**

- Number of persons trained on plant management systems in crop commodities.

**2009 :1350                      2010 :1500                      2011 :1500                      2012 :1500                      2013 :1500**

- Number of persons trained on products quality in crop commodities.

**2009 :800                      2010 :950                      2011 :1000                      2012 :1000                      2013 :1000**

- Number of persons trained on value added in crop commodities.

**2009 :500                      2010 :550                      2011 :600                      2012 :600                      2013 :600**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Number of farmers that adopted one or more recommended practices of the plant management systems in crop commodities.
2	Number of farmers that increased production in crop commodities.
3	Number of farmers that increased the quality in crop commodities.
4	Number of farmers that adopted new value-added practices in crop commodities.
5	Number of farmers that increased their income after having adopted one or more practices of plant management systems. and/or product quality.

**Outcome #1****1. Outcome Target**

Number of farmers that adopted one or more recommended practices of the plant management systems in crop commodities.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :900                      2010 : 900                      2011 : 900                      2012 :900                      2013 : 900**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems

**Outcome #2****1. Outcome Target**

Number of farmers that increased production in crop commodities.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :580                      2010 : 600                      2011 : 600                      2012 :650                      2013 : 650**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems

**Outcome #3****1. Outcome Target**

Number of farmers that increased the quality in crop commodities.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :400                      2010 : 500                      2011 : 500                      2012 :500                      2013 : 500**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 204 - Plant Product Quality and Utility (Preharvest)

**Outcome #4****1. Outcome Target**

Number of farmers that adopted new value-added practices in crop commodities.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :250                      2010 : 300                      2011 : 325                      2012 :325                      2013 : 325**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 204 - Plant Product Quality and Utility (Preharvest)

**Outcome #5****1. Outcome Target**

Number of farmers that increased their income after having adopted one or more practices of plant management systems. and/or product quality.

**2. Outcome Type :** Change in Condition Outcome Measure

2009 :350

2010 : 400

2011 : 400

2012 :400

2013 : 400

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 205 - Plant Management Systems

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Economy
- Government Regulations
- Competing Public priorities
- Competing Programatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)
- Other (Imports from other countries)
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Public Policy changes

**Description**

Puerto Rico, being a tropical island in the Caribbean, can be affected by natural disasters that in turn can have devastating effects on our agriculture. Long periods with too much rain or without rain and hurricanes are common. High winds and rain from tropical storms (hurricanes) affect production, product quality, and increase the dependence on imported products.

Changes in the economy and public policies cause farmers to change their priorities and reduce their farm capital. When the general feeling in the economy is positive, the farmers are more aggressive in their farm investments. Also, Puerto Rico depends on imports of food products to supply the food demand and changes in prices and the quantity of products from other countries affect the local production.

The success of crop production programs depends on the amount of time allocated by PRAES county agents and crop specialists. Changes in program priorities by the administration have negative effects on program goals.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Before-After (before and after program)

**Description**

Before and after each training a test will be administered to the participants to measure knowledge gained.

**2. Data Collection Methods**

- Sampling

**Description**

The county agents can take notes of farmer's progress during the farm visits and in trainings or short courses. They can also administer tests to know how the farmers are using the different practices.

**V(A). Planned Program (Summary)****Program #6****1. Name of the Planned Program**

Engineering and Biosystems

**2. Brief summary about Planned Program**

A cost-effective agriculture requires efficient engineering practices. The majority of the farms in Puerto Rico have structures that form part of their infrastructure. Biological systems compose most of the waste management, recycling, and reuse operations in farms with animals in confinement. The Engineering and Biosystems program seeks to improve existing structures and to provide farmers with model plans that comply with permits requirements. Through this program, PRAES helps farmers with animals in confinement to prepare waste management systems that meet state and federal requirements. In the area of irrigation and drainage, most of our efforts are aimed at the effective operation and maintenance of the equipment and water conservation

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
401	Structures, Facilities, and General Purpose Farm Supplies	15%			
402	Engineering Systems and Equipment	10%			
403	Waste Disposal, Recycling, and Reuse	65%			
405	Drainage and Irrigation Systems and Facilities	10%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Most farms in Puerto Rico have structures and waste management systems as part of their infrastructure; many of these old and were built without permits. The experience with tropical hurricanes during the past two decades has motivated changes in the local building codes that affect agriculture. In addition to reducing the risk to human life of many of the existing structures, new structures need to follow efficient engineering practices and comply with the permit requirements of the Puerto Rico Buildings and Regulations Authority and Environmental Quality Board, the Department of Health, and other agencies. Financing and government incentives for new projects are issued pending compliance with all permits.

There is a high risk of pollution of surface and groundwater by agriculture. The new regulations for farms with animals in confinement have completed the public hearings process and are waiting to be signed into law. These regulations affect all farms with animals in confinement that produce more than 5 cubic feet of waste. Farmers need to be oriented on these new regulations.



In addition, the existing waste management systems of many farms will have to be modified and, in some cases, relocated. These modifications need to be done minimizing the economic burden on the farmers.

Water quality is also affected by the design, construction, and maintenance of septic systems. More than 50% of all households in Puerto Rico dispose of their wastewater in septic systems; many of which are overloaded, their drain fields are not working, and receive no maintenance. Preliminary research results by the School of Public Health of the UPR indicate that the risk to human health from septic systems is imminent. More than 300 new irrigation systems were constructed on the Island as a result of legislation issued in 1995; these systems need maintenance so that they work effectively. The older systems also need operation and maintenance. The subject of efficient water use and conservation by the agricultural sector is addressed in a forthcoming water use plan by the Department of Natural and Environmental Resources. This document will make water conservation a key issue and farmers need to be kept informed and educated on this matter.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

In our experience with the Engineering and Biosystems program we have found that farmers are motivated by one or more of the following: economic incentives from the government, laws and regulations that require they make improvements in their farms, and a high rate of return in their investment (cost effectiveness). Traditionally, most of our farmers have received economic incentives from the PR Department of Agriculture (PRDA); and even though it has announced reductions in some of these incentives, it will continue to offer incentives for the improvement of farm structures and the installation of waste management systems. The new environmental regulations and pressure from environmentalists will motivate farmers to improve their waste management practices. To be cost effective, many of the small farmers will try to increase the size of their operations (economies of scale). Success in achieving this goal will depend on obtaining all of the required permits and financing from the lending institutions. The financing packages offered by banks for new projects and for improvements to existing projects require compliance with all permits; and insurance companies only insure those structures which can be guaranteed to comply with the new building code requirements. PRAES staff has been submitting proposals and working on special projects to obtain external resources to expand our capabilities. Our program could be expanded, if we are successful in attracting external funding and working through our network of county agents.

### 2. Ultimate goal(s) of this Program

Our ultimate goal is to improve agricultural infrastructures and waste disposal management through the use of effective engineering and biological systems.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	5.9	0.0	0.0	0.0
2010	5.9	0.0	0.0	0.0
2011	5.9	0.0	0.0	0.0
2012	5.9	0.0	0.0	0.0
2013	5.9	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

•

Conduct workshops and meetings.

- Establish collaborations with government agencies (Environmental Quality Board; State Departments of Health, Agriculture, Environmental and Natural Resources, and Education; Puerto Rico Aqueducts and Sewage Authority; USEPA; USDA; NRCS; and others).
- Establish collaborations with our partners in the University of Puerto Rico and other educational institutions.
- Develop educational material consisting of model plans and specifications for structures.
- Distribute plans and specifications for structures.
- Design waste management systems (new or improvement to existing facilities).
- Collaborate in the construction of demonstration facilities.

## 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Workshop</li> <li>• One-on-One Intervention</li> <li>• Group Discussion</li> <li>• Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>• Web sites</li> <li>• Other 1 (Radio Programs)</li> </ul>

## 3. Description of targeted audience

Extension professionals, government personnel (professional), professionals from the private sector, and farmers.

## V(G). Planned Program (Outputs)

### 1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	4200	1000	0	0
2010	4300	1000	0	0
2011	4500	1000	0	0
2012	4500	1000	0	0
2013	4500	1000	0	0

### 2. (Standard Research Target) Number of Patent Applications Submitted

#### Expected Patent Applications

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

### 3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	1	1
2010	0	1	1
2011	0	1	1
2012	0	1	1
2013	0	1	1

**V(H). State Defined Outputs****1. Output Target**

- Number of workshops and meetings offered.

**2009 :100                      2010 :100                      2011 : 100                      2012 :100                      2013 :100**

- Number of collaborations established to improve engineering and biological systems infrastructure.

**2009 :100                      2010 :100                      2011 : 100                      2012 :100                      2013 :100**

- Number of clients that participated in the workshop on structures.

**2009 :350                      2010 :350                      2011 : 350                      2012 :350                      2013 :350**

- Number of clients that participated in workshop on waste management systems.

**2009 :500                      2010 :500                      2011 : 500                      2012 :500                      2013 :500**

- Number of waste management systems designed.

**2009 :50                      2010 :50                      2011 : 50                      2012 :50                      2013 :50**

- Number of clients that participated in workshop on drainage or irrigation systems.

**2009 :50                      2010 :50                      2011 : 50                      2012 :50                      2013 :50**

- Number of plans and specifications for model structures completed and distributed.

**2009 :50                      2010 :50                      2011 : 50                      2012 :50                      2013 :50**

- Number of demonstration facilities established.

**2009 :2                      2010 :2                      2011 : 2                      2012 :2                      2013 :2**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Number of clients that increased their knowledge about improvements to increase the efficiency of their structures (new and existing) and compliance with regulations.
2	Number of clients that increased their knowledge about appropriate systems for waste management in their projects.
3	Number of clients that increased their knowledge about drainage or irrigation facilities.
4	Number of clients that adopted one or more of the recommended practices to increase the efficiency of their structures and comply with all permits.
5	Number of clients that adopted one or more practices to improve their drainage or irrigation facilities.
6	Number of farmers that improved their structures (new or existing) and/or comply with permits.
7	Number of waste management systems improved (new or existing).
8	Number of drainage or irrigation facilities improved.
9	Number of farmers that increased their production as a result of improving their structures.
10	Number of farmers that increased their production as a result of improving their waste management systems.
11	Number of farmers that increased their production as a result of improving their drainage or irrigation facilities.

**Outcome #1****1. Outcome Target**

Number of clients that increased their knowledge about improvements to increase the efficiency of their structures (new and existing) and compliance with regulations.

**2. Outcome Type :** Change in Knowledge Outcome Measure

2009 :0                      2010 : 0                      2011 : 0                      2012 :0                      2013 : 0

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies

**Outcome #2****1. Outcome Target**

Number of clients that increased their knowledge about appropriate systems for waste management in their projects.

**2. Outcome Type :** Change in Knowledge Outcome Measure

2009 :300                      2010 : 300                      2011 : 300                      2012 :300                      2013 : 300

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 403 - Waste Disposal, Recycling, and Reuse

**Outcome #3****1. Outcome Target**

Number of clients that increased their knowledge about drainage or irrigation facilities.

**2. Outcome Type :** Change in Knowledge Outcome Measure

2009 :0                      2010 : 0                      2011 : 0                      2012 :0                      2013 : 0

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 405 - Drainage and Irrigation Systems and Facilities

**Outcome #4****1. Outcome Target**

Number of clients that adopted one or more of the recommended practices to increase the efficiency of their structures and comply with all permits.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :125                      2010 : 125                      2011 : 125                      2012 :125                      2013 : 125

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies

**Outcome #5****1. Outcome Target**

Number of clients that adopted one or more practices to improve their drainage or irrigation facilities.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :5**                      **2010 : 5**                      **2011 : 5**                      **2012 :5**                      **2013 : 5**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 405 - Drainage and Irrigation Systems and Facilities

**Outcome #6****1. Outcome Target**

Number of farmers that improved their structures (new or existing) and/or comply with permits.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :50**                      **2010 : 50**                      **2011 : 50**                      **2012 :50**                      **2013 : 50**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies

**Outcome #7****1. Outcome Target**

Number of waste management systems improved (new or existing).

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :150**                      **2010 : 150**                      **2011 : 150**                      **2012 :150**                      **2013 : 150**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 403 - Waste Disposal, Recycling, and Reuse

**Outcome #8****1. Outcome Target**

Number of drainage or irrigation facilities improved.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :5**                      **2010 : 5**                      **2011 : 5**                      **2012 :5**                      **2013 : 5**

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 405 - Drainage and Irrigation Systems and Facilities

**Outcome #9****1. Outcome Target**

Number of farmers that increased their production as a result of improving their structures.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :50

2010 : 50

2011 : 50

2012 :50

2013 : 50

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies

**Outcome #10****1. Outcome Target**

Number of farmers that increased their production as a result of improving their waste management systems.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :70

2010 : 70

2011 : 70

2012 :70

2013 : 70

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 403 - Waste Disposal, Recycling, and Reuse

**Outcome #11****1. Outcome Target**

Number of farmers that increased their production as a result of improving their drainage or irrigation facilities.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :2

2010 : 3

2011 : 3

2012 :3

2013 : 3

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 405 - Drainage and Irrigation Systems and Facilities

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Public Policy changes
- Economy
- Other (Availability economic incentives)
- Competing Programatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations

**Description**

In a tropical island setting, agricultural priorities can be drastically affected by natural disasters. Tropical hurricanes and long periods without rain or with too much rain are the most common. Many agricultural facilities can be severely affected by high

winds caused by hurricanes and periods of no rain or excessive rain can severely affect crops and increase the dependency on imported concentrated cattle feed.

A general feeling that the economy is weak is another factor that precludes people from investing in the improvement of the infrastructure in their farms. When the general feeling is that the economy is strong, people tend to be more aggressive. Changes in public policies and regulations cause farmers to change their priorities and to postpone projects. The availability of economic incentives is decisive in making final decisions that require capital investments. Many projects depend on economic incentives to be cost effective. Our program depends on the amount of time that the PRAES county agents can allocate to it. Any changes in priorities set by the administration will have an effect on the program's outcomes.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Case Study

#### **Description**

Case studies will be used to evaluate this planned program to gather an in-depth understanding of the factors of the program that have influenced the farmers to adopt the recommended practices. The cases will be individual clients that have succeeded in adopting the recommended practices. Therefore, the evaluation period will depend on the time for adoption. Case studies will begin approximately by the second year of the program. Five clients will be selected, one from each of our district regions.

### **2. Data Collection Methods**

- Unstructured
- On-Site
- Sampling
- Case Study
- Observation

#### **Description**

We will make use of qualitative methods, including observations in the projects, and interviews with the clients. Interviews will be non-structured, as themes and issues will emerge through the conversation. We will sample five clients to gather in-depth understanding of how the program has helped them achieve success in their projects.



**V(A). Planned Program (Summary)****Program #7****1. Name of the Planned Program**

Families and Children

**2. Brief summary about Planned Program**

The family structure in Puerto Rico has changed with important implications for the children. The issues that concern policy makers and the public the most are the increasing number of single-parent families over the past three decades and the increase in family violence, which affect the well-being of our families and their members. It is important to develop educational programs to empower families to nurture, support, and guide their members throughout their lives and motivate them to improve their quality of life and well-being. To reach this goal, the family life specialist develops programs facilitating strategic planning, workshops, curriculum, and trainings in successful parenting, character traits, values, family strengths, aging aspects, and life skills for families, children, youth, and elderly people. A special family project will be continued to help develop skills to change behaviors and adopt practices to strengthen family relations and values.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being	100%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The family is considered the first institution that has the responsibility and commitment to prepare and educate its members and it is where character is formed and values are learned. The increase in population and social, political, and economic changes impact Puerto Rican families, affecting their vital function (2000 Census of Population for Puerto Rico and other statistics). The increase in the number of divorces, single mothers, adolescent mothers, stepfamilies, woman headed household families (27%), and grandparents raising grandchildren (53%) have affected the quality of life. This has resulted in an increase in child maltreatment and neglect, sexual and emotional abuse, family violence, high school dropouts (14%), and others. We must, therefore, direct our efforts to changing this situation by developing and promoting education to provide knowledge, strategies, and skills to change behaviors and adopt practices to strengthen and empower family relations and values.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

Our experience working with this program shows that:

- Coordination and collaboration with government and private agencies and partnerships are important to increase the impact of

educational/preventive programs through the intervention of Extension Specialists/Educators.

- Education to our Extension agents/educators and community leaders will help to disseminate and promote the information to families and children.
- Clientele is motivated to learn and adopt practices in family relations and related areas to satisfy their essential needs.
- Submitting proposals and working on special projects to obtain external resources that expand our staff and capabilities.
- Information related to human development and family relations available through the internet, publications, curriculum, articles, radio and TV programs, and trainings help to reach state goals.

## 2. Ultimate goal(s) of this Program

- Increase the number of families that support and guide their members throughout their lives.
- Decrease child maltreatment, neglect, and family violence.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	9.2	0.0	0.0	0.0
2010	9.2	0.0	0.0	0.0
2011	9.2	0.0	0.0	0.0
2012	9.2	0.0	0.0	0.0
2013	9.2	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

- Participate in radio/TV programs.
- Offer advice when clientele visit the office.
- Develop curriculum related to family relations, child development, human development, elder care, family resilience, and related areas.
- Conduct workshops, trainings, and meetings.
- Continue the collaboration with government and private agencies and institutions (Department of Family, Department of Education, Head Start, local government).
- Collaboration with partners in the University of Puerto Rico and other educational institutions.
- Use and implementation of curriculum, educational material, etc.
- Write proposals.

### 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Workshop</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 2 (Campaigns &amp; Exhibitions)</li> <li>● Other 1 (Radio Programs)</li> <li>● Newsletters</li> </ul>

### 3. Description of targeted audience

Extension agents, home economists, PRAES specialists, government personnel (professionals), professionals from other agencies, parents, families, children, youth, elder people, volunteers, and general public.

**V(G). Planned Program (Outputs)****1. Standard output measures****Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	9000	1500	0	0
2010	9000	1500	0	0
2011	9000	1500	0	0
2012	9000	1500	0	0
2013	9000	1500	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of workshops, trainings, and meetings offered.

2009 :60                      2010 :60                      2011 :60                      2012 :60                      2013 :60

- Number of collaborations/established.

2009 :260                      2010 :260                      2011 :260                      2012 :260                      2013 :260

- Number of persons trained in parenting and related areas.

2009 :900                      2010 :900                      2011 :900                      2012 :900                      2013 :900

- Number of volunteers/community leaders trained in family relations and related areas.

2009 :200                      2010 :200                      2011 :200                      2012 :200                      2013 :200

- Number of persons trained in aging aspects.

2009 :200	2010 :200	2011 : 200	2012 :200	2013 :200
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- Number of persons trained in values, character traits, and/or family strengths.

2009 :600	2010 :600	2011 : 600	2012 :600	2013 :600
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V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons that reported improved parenting skills.
2	Number of persons that increased knowledge in parenting and related areas.
3	Number of volunteer/community leaders that demonstrated their adopted skills by teaching and/or training others.
4	Number of persons that gained knowledge in aging aspects.
5	Number of persons reported improved skills and increased knowledge in values and character traits.
6	Number of children and youth benefitted indirectly.
7	Number of persons that increased knowledge from educational material and resources through campaigns and other educational methodologies

**Outcome #1****1. Outcome Target**

Number of persons that reported improved parenting skills.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**600**2010 :** 600**2011 :** 600**2012 :**600**2013 :** 600**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #2****1. Outcome Target**

Number of persons that increased knowledge in parenting and related areas.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009 :**0**2010 :** 0**2011 :** 0**2012 :**0**2013 :** 0**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #3****1. Outcome Target**

Number of volunteer/community leaders that demonstrated their adopted skills by teaching and/or training others.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**100**2010 :** 100**2011 :** 100**2012 :**100**2013 :** 100**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #4****1. Outcome Target**

Number of persons that gained knowledge in aging aspects.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009 :**100**2010 :** 100**2011 :** 100**2012 :**100**2013 :** 100**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #5****1. Outcome Target**

Number of persons reported improved skills and increased knowledge in values and character traits.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009** :600                      **2010** : 600                      **2011** : 600                      **2012** :600                      **2013** : 600

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #6****1. Outcome Target**

Number of children and youth benefitted indirectly.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :200                      **2010** : 200                      **2011** : 200                      **2012** :200                      **2013** : 200

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**Outcome #7****1. Outcome Target**

Number of persons that increased knowledge from educational material and resources through campaigns and other educational methodologies

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009** :2000                      **2010** : 2000                      **2011** : 2000                      **2012** :2000                      **2013** : 2000

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Other (Availability fed., ext. funds)
- Competing Public priorities
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes

**Description**

In Puerto Rico we are subject to a variety of natural events, which include hurricanes, long periods with heavy rains and/or winds, and droughts. There is a general feeling that the economy is weak and the government's inability to solve our budget problems projects an unstable economy. As a result, we expect changes in the money assigned to government agencies and changes in public policy and priorities. The support needed from the municipal mayors may vary, if their interests are different from the

interests presented by the program. Another situation could be any change in priorities of the agency's administrators that could have an effect on the program outcomes.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- During (during program)
- Time series (multiple points before and after program)

#### **Description**

The CYFAR PREPAS: NH project evaluation is composed of a yearly evaluation during the complete project period to measure changes at short and mid stages different points in time and progress throughout the quinquennium. Cross sectional analysis and time series analysis will be performed using descriptive, cause-effect, discriminant, and predictive statistics tools. Major changes will be: in the very short term-satisfaction level, knowledge, skills attitudes, and aspirations related to the topics covered in the project curricula; midterm-comparisons between behavior patterns and adoption and adaption of practices promoted by project educational activities; long term- initial and final well-being indices comparisons among participants. Factors for major differentiating analysis will be: demographics, site location, project stage, and level of intervention. Areas to be analyzed will consider project purpose.

PREPAS/NH program purpose is to develop a sane, healthy, and wise parents/family/communal environment that will entitle children to a safe and promising future. This program will equip parents with the knowledge, skills and attitudes for meeting their children's physical, social, cultural, emotional, and intellectual needs and provide moral guidance and direction. It will also empower the communities for self-sufficiency and increased collective resilience. The program will also expose individuals to the use of information technology as a way to reduce limitations and barriers.

### **2. Data Collection Methods**

- On-Site
- Sampling
- Journals
- Whole population
- Portfolio Reviews
- Unstructured
- Structured
- Observation
- Tests

#### **Description**

Data collection methods and instrument to be used will vary according to the activities and stages of the project. During this project year period:(1) On-site local activities by community faculty, principal instruments and methods to be used are-pre and post tests, reaction sheets, member portfolio, member reflexive diaries and albums review, observations for the whole population;(2) At the complete project level by project evaluator, surveys to participants (on-site, the possibility of web-based surveys exists accordingly to the availability and skills of technology use), interviews of participants and staff in a structured and/or unstructured manner, standardized inventories administered to participants. At the state level, data collection will be from the population and/or from samples.



**V(A). Planned Program (Summary)****Program #8****1. Name of the Planned Program**

Empowering and Self-management Communities

**2. Brief summary about Planned Program**

Poverty is one of the most serious problems in Puerto Rico and requires urgent measures. According to the 2000 Population Census, 48% of the Puerto Rican population lives below the poverty level. Some of our communities are at high risk of suffering from natural disasters such as floods from rivers and streams during the rainy season. The Community Resources Development Program approaches its efforts to guiding community leaders towards self management and empowering and developing their emergency plans to face these situations. This will be obtained by developing the leaders' capacities through trainings that will provide them with the necessary tools to organize their communities, get involved in the decision making process, as well as facilitating and encouraging the communities' participation.

In our social and disadvantaged communities there is a prevalence of families with unequal access to economic and social development, compared to other population groups on the island. With the development of the program, we expect citizen participation in personal, family and community decision making. We will encourage community efforts to respond and find solutions to population needs, participation in power structures, and access to the prevention of social evils.

The community is the focal point where people feel a sense of personal involvement and take pride in their actions. Work in this area provides the opportunity to obtain empowering and self-managing communities by the understanding of social, technological and demographic changes occurring in society, as well as the understanding of the development, quality, and function of community institutions and social services.

The areas of work include the sociology/psychology of the farm family, and other aspects of rural life and living conditions; the impact of change in the communities; community development, asset building, civic engagement and leadership; social and educational factors affecting poverty and social impact of environmental change; development, coordination and adaptation of agencies and organizations; institutions that offer community services, including volunteer organizations, non-profit groups, and centers; development of community fire prevention and other emergencies that occur in the community; suppression plans and related homeland security activities; and community and civic engagement. The empowering and self-management of the communities requires information, guidance, education and civic engagement. Strong communities develop programs, anchored in research, education and in teaching their partners. It is important to help diverse communities chart their futures.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
803	Sociological and Technological Change Affecting Individuals, Familie	50%			
805	Community Institutions, Health, and Social Services	50%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Forty six per cent (46.1%) of the municipalities in Puerto Rico have from 50% to 59% of their families living below the standard definitions of poverty. The Special Communities Office of Puerto Rico (2001) developed social and economic studies in 686 special communities with a sample of 76,306 resident surveys. The study found that there are 138 outskirts, with 37.3% of the residents jacking property titles of their houses; 37% of the houses are built in wood, cement and zinc; 78.3% are unemployed persons, lacking security, public transportation and confronting social diseases such as use of alcohol and drugs.

The social and economic disadvantaged communities showed the a prevalence of the following indicators: school desertion; illiteracy (10%); families with only one person working; high unemployment rate; people with a lack of work skills; and lack of basic public services such as schools, post offices, and waste disposal management systems. There was also a total or partial absence of infrastructure and basic services like electricity, aqueducts, sewers, and recreational areas; and environmental problems. Other social problems such as addictions, security problems and domestic violence are endemic. Due to their low income, residents are forced to depend on government assistance (42.4% or 407,275 PAN families) to meet their nutritional needs.

The Community Resources Development Program focuses its efforts to attending the social and economically disadvantaged communities training leaders in community organizations and fostering empowerment and self management. Community development has been improving the social, economic, and environmental quality of live for individuals and families. The leadership developed in the communities contributes to civic engagement and healthy communities by promoting the interaction of community institutions, health and social services. It is a priority of the State to build a visionary, accountable and inclusive culture of civic decision making and problem solving ensuring strong human and social services to support individuals families and those in need; ensure public health and safety projects in the communities and help build strong community development programs, anchored in research, education and teaching their partners.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

- To obtain a positive outcome in the program development it is necessary that people work together to address their common interests and goals.
- A strong program is developed when the people involved in it are motivated to learn and adopt changes in the implementation of the program.
- The use of capable leaders in making decisions, participating in community organization, and evaluation, helps bring about solutions to population needs and encourages a strong program.

**2. Ultimate goal(s) of this Program**

To obtain empowered and self-managed communities improving the social, economic and environmental quality for individuals and families.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	26.4	0.0	0.0	0.0
2010	26.4	0.0	0.0	0.0
2011	26.4	0.0	0.0	0.0
2012	26.4	0.0	0.0	0.0
2013	26.4	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Workshops and meetings
- Develop educational material such as curriculum and modules.
- Establish community coalitions with volunteer organizations, community services organizations, institutions, and other agencies
- Seminars with community services institutions that offer assistance in case of disaster or emergency, including volunteer organizations, non-profit groups and government agencies.
- Community educational campaigns

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Education Class</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Publications, Exhibitions)</li> <li>● Other 1 (Radio Programs)</li> <li>● Public Service Announcement</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Individuals and families in social and economic disadvantage communities and key leaders.

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	2500	2500	0	0
2010	3000	3000	0	0
2011	3200	3200	0	0
2012	3500	3500	0	0
2013	4000	4500	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	1	1
2011	0	0	0
2012	0	1	1
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of workshops in leadership development.

**2009 :150                      2010 :150                      2011 : 150                      2012 :175                      2013 :175**

- Number of leaders participating in workshops.

**2009 :1200                      2010 :1200                      2011 : 1200                      2012 :1300                      2013 :1300**

- Number of workshops on community organization and empowerment development.

**2009 :35                      2010 :40                      2011 : 50                      2012 :65                      2013 :65**

- Number of leaders participating in workshops on community organization and empowerment development.

**2009 :175                      2010 :200                      2011 : 250                      2012 :325                      2013 :325**

- Number of coalitions established in the communities.

**2009 :35                      2010 :40                      2011 : 50                      2012 :65                      2013 :65**

- Number of coalition members.

**2009 :150                      2010 :175                      2011 : 200                      2012 :250                      2013 :300**

- Number of seminars on emergency and disaster situations offered.

**2009 :35                      2010 :40                      2011 : 50                      2012 :65                      2013 :65**

- Number of leaders participating in seminars.

**2009 :175                      2010 :200                      2011 : 250                      2012 :325                      2013 :325**

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of communities organized.
2	Number of communities that took action over their necessities to improve their quality of life through empowerment and self-management.
3	Number of community projects established to benefit the community.
4	Number of leaders participating actively in the design and implementation of community projects.
5	Number of communities that developed an emergency and safety plan.

**Outcome #1****1. Outcome Target**

Number of communities organized.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :35                      **2010** : 40                      **2011** : 50                      **2012** :65                      **2013** : 65

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 805 - Community Institutions, Health, and Social Services

**Outcome #2****1. Outcome Target**

Number of communities that took action over their necessities to improve their quality of life through empowerment and self-management.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :35                      **2010** : 40                      **2011** : 50                      **2012** :65                      **2013** : 65

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

**Outcome #3****1. Outcome Target**

Number of community projects established to benefit the community.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :35                      **2010** : 40                      **2011** : 50                      **2012** :65                      **2013** : 65

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 805 - Community Institutions, Health, and Social Services

**Outcome #4****1. Outcome Target**

Number of leaders participating actively in the design and implementation of community projects.

**2. Outcome Type :** Change in Action Outcome Measure

**2009** :350                      **2010** : 400                      **2011** : 450                      **2012** :500                      **2013** : 500

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

- 805 - Community Institutions, Health, and Social Services

## **Outcome #5**

### **1. Outcome Target**

Number of communities that developed an emergency and safety plan.

### **2. Outcome Type :** Change in Action Outcome Measure

**2009** :35

**2010** : 40

**2011** : 50

**2012** :65

**2013** : 65

### **3. Associated Institute Type(s)**

- 1862 Extension

### **4. Associated Knowledge Area(s)**

- 805 - Community Institutions, Health, and Social Services

## **V(J). Planned Program (External Factors)**

### **1. External Factors which may affect Outcomes**

- Public Policy changes
- Economy
- Appropriations changes
- Competing Public priorities
- Natural Disasters (drought,weather extremes,etc.)

#### **Description**

The external factors that interact and influence the development of the program include natural disasters, the economic structure, changes in public politics and issues, changing policies and programs priorities.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Case Study

#### **Description**

Descriptive case studies will be used to understand how Extension has contributed in the development of self-managed communities. A sample of five communities will be selected. These communities will be followed throughout the program to describe their transformation and empowerment process.

### **2. Data Collection Methods**

- Sampling
- Observation
- Portfolio Reviews
- Journals
- Unstructured
- Case Study
- Other (Focus Groups)

#### **Description**

A sample of five communities will be followed to describe the empowerment process in the communities. The main methodology for data collection will be defined as case studies; however, various common methods will be employed during this process:

- Non-structured – Interviews with key leaders to understand how Extension has contributed in their leadership development and how Extension can contribute to the empowerment of their communities.
- Observations – A structured standardized guideline will be employed to observe meetings and other activities in the community to identify the number and level of participation of the community members.

- c. Portfolios – Analysis of documents used by the community to describe their activities.
- d. Journals – Key members in the communities will be asked to keep journals to describe the changes they observe in their communities as well as on their own personal changes and civic engagement.
- e. Focus groups – This qualitative methodology will be used to understand, through the dynamics of the group process, how the members of the community describe the changes that occurred and how these changes have affected their personal life and the quality of life of the community.



**V(A). Planned Program (Summary)****Program #9****1. Name of the Planned Program**

Plant Protection

**2. Brief summary about Planned Program**

PRAES uses the Plant Protection program to manage, enhance, and implement integrated pest management (IPM) techniques. Its objectives are broad and may change in scope from year to year depending on pest incidence. It includes all horticulture and agronomic plants of economic importance to Puerto Rico. Our plant protection educational programs promote the adoption of the best management practices to develop IPM systems that protect the environment, conserve the natural resources, and contribute to the competitiveness, profitability, and sustainability of Puerto Rico's agriculture. The objective is to develop integrated approaches to crop protection, minimizing the impact of pesticides on the environment. The Plant Protection program facilitates the coordination of work that includes diverse disciplines, organizations, and job functions (extension, teaching, research). It is the central point of contact for inquiries about integrated pest management, pesticide applicator training, and pesticide impact, enhancing the visibility of the University of Puerto Rico-Mayaguez Campus' protection program.

**3. Program existence :** Mature (More than five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	25%			
212	Pathogens and Nematodes Affecting Plants	20%			
213	Weeds Affecting Plants	20%			
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%			
216	Integrated Pest Management Systems	30%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The main agricultural enterprises in Puerto Rico are: coffee, vegetables, banana and plantains, citrus fruits, starchy crops, and ornamentals. Their annual contribution to the economy is about \$300 millions. Crop management is intensive, with excessive

applications of fertilizers and pesticides that create a potential threat to human health and the environment. With rising pesticide costs and growing public concerns about pesticide residues in food and contamination of surface and ground-water supplies, farmers want to reduce their reliance on chemicals to control insects, nematodes, weeds, and diseases. The situation is similar in Puerto Rico's urban settings. The Island has experienced unprecedented rates of urban and industrial development. Between 1992 and 1997, Puerto Rico lost approximately 12,460 acres per year of agricultural and open land (USDA National Resources Inventory). Such an accelerated development triggered a boom of the landscape maintenance industry; which includes approximately 1,500 pest control operators (PCO's) and 1,000 landscapers. Personal interviews with PCO's, landscapers, county agents, and pesticide distributors (2002), revealed that the industry represents a significant challenge and opportunity for the adoption of the IPM approach. Approximately 80% of landscapers and their employees do not know how to monitor and diagnose key pest problems and, instead, resort to indiscriminate periodic pesticide applications. This promotes unnecessary applications of pesticides with monetary costs and needlessly increases the load of these pollutants in the urban environment. The priority of the Extension Plant Protection program is to produce educational materials for Extension agents and other agricultural educators in Puerto Rico. IPM educational materials available are in English and/or are not readily available or comprehensible to an average field employee; therefore, it is necessary that these materials be available in Spanish to teach environmentally responsible pest management strategies for the protection of our crops and urban vegetated areas. IPM helps these diverse audiences accomplish this goal. Rather than relying strictly on pesticides to cope with pest problems, they can use a combination of biological, cultural, mechanical, and limited chemical control strategies. This minimizes the potential for adverse effects on human health or the environment while maximizing economic benefits to both producers and consumers. The adoption of the IPM approach is essential to diminish the negative impacts associated with pest control. In agriculture and landscape, it effectively reduces the potential for pest problems, is environmentally responsible, and economically practical.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

Puerto Rico grows a great diversity of valuable crops that constitute a major source of healthy locally-grown products which contribute to the local and regional economies. Progress has been made in developing management programs and educational materials for some crops, such as: coffee, plantain and banana, and citrus. These commodities are affected by a variety of pests. Thus, coordinated efforts are needed to determine the importance of each crop, the associated pests, and the plan of action. Vegetables are often grown close to urban neighbors and negative impact related to pesticide use is expected. The development and implementation of IPM programs in Puerto Rico, that focus on reduced pesticide input would help minimize problems associated with pesticide use near urban areas. Such efforts would be enhanced by educational programs that teach growers integrated management methods. Moreover, federal and state laws and regulations favor the use of integrated pest management. The Food Quality Protection Act greatly restricts the use of pesticides while promoting IPM practices. To achieve permanent solutions to pest problems, the pest management staff will educate Extension agents and other agricultural educators in Puerto Rico about their role and participation in training growers, pesticide applicators, landscapers, and other personnel related to agriculture. Also, cooperation from extension agents, researchers, faculty, and government entities (PR Department of Agriculture, USDA Forest Service) is an integral part of PRAES' pest management program and, as a result of this multidisciplinary teamwork, pest management services and information flow more effectively to the clientele. The Extension Plant Disease Clinic will diagnose disease problems and make pest management recommendations to growers, ornamental producers, landscapers, and other persons, aiding in the main goal of the program of promoting the use of IPM and providing technical assistance to a diverse clientele. The clinic is connected to the IFAS Distance Diagnostic and Identification System (DDIS) which allows users to submit digital samples obtained in the field for rapid diagnosis and identification of pests.

### 2. Ultimate goal(s) of this Program

To increase the use of integrated pest management options to minimize pesticide use and reduce contamination.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	11.5	0.0	0.0	0.0
2010	11.5	0.0	0.0	0.0
2011	11.5	0.0	0.0	0.0
2012	11.5	0.0	0.0	0.0
2013	11.5	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

PRAES agents will continue training farmers on pests of economical importance that affect the profitability of the crop commodities. In banana and plantain we will train growers in estimation of the incidence of Black Sigatoka in the field. A field guide about IPM of Black Sigatoka prepared by the plant pathology and the starchy crops specialists will be delivered to growers in the trainings. Demonstrations about sustainable integrated disease management will be conducted in plantain and banana farms to show the benefits of IPM. In forest, we will develop a field guide "Management of Forest Pests" for agricultural educators and personnel of the Department of Natural and Environmental Resources about the management of key pests in nurseries and urban forests. The manual and electronic presentations will be posted in the Extension web page. We will continually update the web page and the information on destructive key pests and pests of possible introduction, to make it easier to document the benefits derived from IPM and guide future research and education efforts. In herb production, we will emphasize the identification of key pests of culantro ("Eryngium foetidum") and cilantro ("Coriandrum sativum") and the development of educational materials. A field guide and electronic presentation about management of key pests of culantro and cilantro will be developed to assist agricultural educators in training farmers to understand and implement IPM practices. Seminars and radio programs will be developed to inform about key pests of cilantro and the management practices available for control. There will be demonstrations on farms or hydroponic nurseries of producers interested to demonstrate the benefits of IPM practices and promote their adoption. The citrus commodity will emphasize on evaluating IPM practices in nurseries to control the citrus leafminer and developing the Citrus Crop Profile. The Crop profile will be developed by the IPM specialist in coordination with the citrus commodity leader and the fruit specialist. An entomologist, researcher of the Crop Protection Department, will evaluate citrus leaf miner IPM practices in nurseries. Seminars will be developed to inform nursery managers, Extension agents and other agricultural educators about the IPM practices available. The plant protection program will continue collaborating with the USDA Forest Service to assist forest nurseries and personnel of state agencies related to forest management by developing educational materials in IPM and updating the web page with forest health information.

### 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Seminars)</li> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Radio Programs)</li> <li>● Web sites</li> <li>● Newsletters</li> <li>● Other 2 (Exhibitions)</li> </ul>

### 3. Description of targeted audience

Pesticide applicators, homeowners, landscapers, Extension agents, farmers, personnel of the Department of Environmental and Natural Resources, agronomists of the Department of Agriculture.

**V(G). Planned Program (Outputs)****1. Standard output measures****Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	3000	5000	0	0
2010	3000	5500	0	0
2011	3000	5500	0	0
2012	3000	5500	0	0
2013	3000	6000	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	2	2
2010	0	2	2
2011	0	2	2
2012	0	2	2
2013	0	2	2

**V(H). State Defined Outputs****1. Output Target**

- Number of trainings offered on pesticide use and IPM program.

**2009 :100                      2010 :150                      2011 :150                      2012 :200                      2013 :200**

- Number of persons that completed a training program in integrated pest management in the crop commodities.

**2009 :350                      2010 :350                      2011 :400                      2012 :400                      2013 :400**

- Number of farmers that completed a training program on pesticide application.

**2009 :2000                      2010 :2000                      2011 :2000                      2012 :2000                      2013 :2000**

- Number of persons trained on commercial pesticide application.

**2009 :1500                      2010 :1500                      2011 :1500                      2012 :2000                      2013 :2000**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Number of persons that acquired knowledge after completing a training program in integrated pest management.
2	Number of persons that adopted one or more techniques after completing an integrated pest management program.
3	Number of persons that reduced the use of pesticides after completing an integrated pest management program.
4	Number of persons that established IPM program after completing a training program.
5	Number of farmers that acquired knowledge after completing a training program in pesticide application.

**Outcome #1****1. Outcome Target**

Number of persons that acquired knowledge after completing a training program in integrated pest management.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009 :**0**2010 :** 0**2011 :** 0**2012 :**0**2013 :** 0**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #2****1. Outcome Target**

Number of persons that adopted one or more techniques after completing an integrated pest management program.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**100**2010 :** 100**2011 :** 100**2012 :**100**2013 :** 100**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #3****1. Outcome Target**

Number of persons that reduced the use of pesticides after completing an integrated pest management program.

**2. Outcome Type :** Change in Condition Outcome Measure**2009 :**75**2010 :** 75**2011 :** 75**2012 :**75**2013 :** 75**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #4****1. Outcome Target**

Number of persons that established IPM program after completing a training program.

**2. Outcome Type :** Change in Condition Outcome Measure**2009 :**50**2010 :** 60**2011 :** 70**2012 :**70**2013 :** 70**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #5****1. Outcome Target**

Number of farmers that acquired knowledge after completing a training program in pesticide application.

**2. Outcome Type :** Change in Knowledge Outcome Measure**2009 :**1900**2010 :** 1900**2011 :** 2000**2012 :**2000**2013 :** 2000**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Natural Disasters (drought,weather extremes,etc.)

**Description**

In Puerto Rico we are at risk of hurricanes, heavy rainfalls, and droughts that can affect crop production. These in turn affect the emphasis on different programs within the agency and the activities that can be performed in the field (field days, field demonstrations, farm visits, etc.).

Changes in public policy regulations can make farmers change their priorities related to crop production. The development of the program depends on the amount of time that the agricultural agents allocate to it. Administrative changes in the priorities can affect program outcomes.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Other (Surveys)
- Before-After (before and after program)

**Description**

A survey , after the completion of trainings to PRAES agents and other educators, will evaluate their knowledge and attitudes concerning IPM. The future evaluation of educational activities and materials will be tracked by interviews of the clientele by Extension agents to determine if they have incorporated IPM practices to their farm management.

## 2. Data Collection Methods

- Structured
- Sampling
- Observation

### Description

To achieve the proposed objectives in the plant protection program we plan to conduct surveys to request information on pesticide use and IPM practices. The surveys will be prepared by the Extension specialists and delivered to the field by the Extension agents. The surveys will be addressed to farmers, pesticide applicators, personnel related to forest management, landscapers, and ornamental producers. Specific indicators of program impacts measured by surveys will include: crop production acreage, number of crop farms and average extension, number of pesticide treatments, rate of pesticides applications, number and kinds of pesticides used (formulation specific), target organisms intended, percentage of growers following pesticide container disposal practices, cost of pesticide application and overall pest management, alternative control measures, number and percentage of farmers following IPM practices such as scouting, biological controls or beneficial organisms, and other specific IPM practices. Evaluation of progress toward objectives of the program will be accomplished through periodic surveys of the commodities included in the plan of work of the program.



V(A). Planned Program (Summary)

Program #10

1. Name of the Planned Program

Soil, Water, and Air

2. Brief summary about Planned Program

The Soil, Water, and Air planned program intends to train our farmers on the appropriate management of our soil, water, and air resources to increase yields and prevent contamination. This is necessary since we are losing available land suitable for agriculture, have a high erosion rate and low soil fertility. In addition, our watersheds are being sedimented, irrigation water is scarce and expensive, and agriculture produces small particles and odors which affect people’s health and production efficiency of the enterprises. The regulatory agencies are enforcing laws to reduce environmental impact with which farmers have to comply in order to receive the required farm operations permits.

Although the Puerto Rico Aqueduct and Sewer Agency (PRASA) provides most of the water that we consume, 300 communities are still operating their own drinking water systems. These systems extract the water directly from rivers, streams or groundwater. Fifty percent of the population receives sewer treatment services from PRASA and the rest uses household septic systems. We need to develop a program that will encourage farmers to adopt practices to reduce the effect of residual fertilizers and conserve the quality of the water for farming and household uses. PRAES will offer technical assistance, conduct follow-ups to the producers, and visit the farms to ensure that the recommended practices are being implemented and working properly. The relation soil-plant-water-air will be analyzed to maintain a balance. Also, educational material will be prepared to deliver the information to the farmers and collaborative efforts with other agencies will strengthen the education.

- 3. Program existence : Intermediate (One to five years)
- 4. Program duration : Medium Term (One to five years)
- 5. Expending formula funds or state-matching funds : Yes
- 6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%			
102	Soil, Plant, Water, Nutrient Relationships	40%			
104	Protect Soil from Harmful Effects of Natural Elements	10%			
111	Conservation and Efficient Use of Water	15%			
112	Watershed Protection and Management	15%			
141	Air Resource Protection and Management	10%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

Puerto Rico is 8,959 square kilometers, and has 17,659 farmers with an average of 58 years old that grow around 57 commodities (2002 Agricultural Census). Sixty percent (60%) of the cultivated land is more than 20% slopes and has an erosion of 10% annually (Natural Resources Conservation Service). The soils have been meteorized, creating a low fertility, wherefore the farmers have to establish conservation practices and a good fertilization program to get reasonable yields.

The gross agricultural income for FY 2007 was \$814.2 million (PR Department of Agriculture). The enterprises coffee, plantains, fruits, and starchy crops, which are cultivated in the hilly area, represented 23% of the total gross income.

Some animal waste disposal systems in Puerto Rico have never been completed or submitted for approval to the regulatory agencies. Often, there is a lack of adequate systems and the existing systems receive little maintenance, causing environmental impacts, such as odors, land and water pollution, and dissemination of pathogens, among others.

Animal production (2002 Agricultural Census) is mostly composed of 195 broilers, 130 egg producers, 363 dairy farms, 700 beef cattle, 1,170 swine, 395 rabbit, 309 lamb, and 208 goat farms. Most of these are small sized family operated farms and have conventional waste management systems, which rely mostly on uncovered lagoons to avoid runoff and possible surface and ground water contamination. The residues are applied to crops or pasture as organic fertilizer. Such practices reduce the nitrogen content of manure by volatilizing nitrogen (ammonia) to the atmosphere with other volatile compounds such as methane, organic and sulfur.

On the other hand, we have problems with the quality and quantity of the water resources due to turbidity, erosion, sedimentation and presence of microorganism. Research is being conducted by the Puerto Rico Agriculture Experiment Station on anaerobic digester to respond to this situation in the dairy cattle and swine enterprises. However, there is still much needed research on practices for combined air and water quality that are environmentally sound and economically feasible.

The Soil, Water and Air planned program is devoted to promoting the education of farmers and people related with agriculture through activities addressed to establish conservation practices to protect the watersheds, increase appropriate fertilization practices, conserve water, and mitigate emissions of particles from agricultural to the air. We will also emphasize on better soil management on the flood plains, the recharge of groundwater, and new alternatives to ensure compliance of air and water quality regulations.

## 2. Scope of the Program

- In-State Extension

### V(D). Planned Program (Assumptions and Goals)

#### 1. Assumptions made for the Program

- Most of the animal farm production is family operated and small in size; they have few options available in terms of adequate waste disposal, considering that such systems require big land areas and are expensive.
- We have to train the farmers on land movement and conservation practices in order to reduce the erosion of the soils.
- NRCS, the Puerto Rico Departments of Agriculture and Natural Resources and Environment will approve incentives to establish conservation practices, as well as water retention and sedimentation reduction practices.
- The Environmental Protection Agency, Puerto Rico Department of Health, the Puerto Rico Environmental Quality Board, and the Puerto Rico Department of Natural Resources and Environment annually report on the regulations and other information which our agricultural agents use to orient our clientele.
- If farmers obtain their operation permits and comply with the environmental regulations, the quality of our soil, air, and water will improve.

#### 2. Ultimate goal(s) of this Program

To improve the utilization and conservation of soil, water, and air through the adoption of practices and regulations.

### V(E). Planned Program (Inputs)

#### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	7.3	0.0	0.0	0.0
2010	7.3	0.0	0.0	0.0
2011	7.3	0.0	0.0	0.0
2012	7.3	0.0	0.0	0.0
2013	7.3	0.0	0.0	0.0

### V(F). Planned Program (Activity)

#### 1. Activity for the Program

- Develop a curriculum on air quality in agriculture (animal waste management).
- Offer short courses and trainings on practices, laws, and regulations related to soil, water, and air.
- Develop a curriculum related to watersheds protection.
- On-site farm visits.
- Establish demonstration projects on the recommended practices for air quality and soil conservation practices.
- Establish collaboration with government agencies (local, state & federal).
- Distribute information at agricultural fair & festivals.
- Field trips to demonstration projects.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Curriculum)</li> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Other 2 (Telephone and email)</li> <li>● Demonstrations</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Exhibitions, Publications)</li> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> </ul>

**3. Description of targeted audience**

Farmers (includes small family farms, large scale farm business operation), farm workers, government professionals, Extension professionals, and community residents.

**V(G). Planned Program (Outputs)****1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	4000	3000	0	0
2010	4000	3000	0	0
2011	4500	3500	0	0
2012	4500	4000	0	0
2013	4500	4000	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0

2010 :0

2011 :0

2012 :0

2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of trainings offered on soil, water, and air.

<b>2009</b> :20	<b>2010</b> :20	<b>2011</b> : 20	<b>2012</b> :20	<b>2013</b> :20
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- Number of farmers trained on agricultural practices for air and water quality.

<b>2009</b> :200	<b>2010</b> :250	<b>2011</b> : 250	<b>2012</b> :300	<b>2013</b> :350
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- Number of people trained on environmental regulations for soil, air and water quality.

<b>2009</b> :400	<b>2010</b> :500	<b>2011</b> : 600	<b>2012</b> :700	<b>2013</b> :800
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- Number of farmers trained on soil fertility.

<b>2009</b> :300	<b>2010</b> :350	<b>2011</b> : 400	<b>2012</b> :400	<b>2013</b> :450
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- Number of farmers trained on soil conservation practices.

<b>2009</b> :200	<b>2010</b> :250	<b>2011</b> : 300	<b>2012</b> :300	<b>2013</b> :400
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- Number of people trained on watershed protection.

<b>2009</b> :100	<b>2010</b> :125	<b>2011</b> : 150	<b>2012</b> :150	<b>2013</b> :200
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- Number of people trained on conservation and effective use of water resources.

<b>2009</b> :300	<b>2010</b> :350	<b>2011</b> : 350	<b>2012</b> :400	<b>2013</b> :400
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V(I). State Defined Outcome

O. No	Outcome Name
1	Number of farmers that adopted the recommended practices for air and water quality
2	Number of farmers that comply with the soil, air, and water regulations.
3	Number of farmers that adopted the fertilization practices.
4	Number of farmers that adopted one or more soil conservation practices.
5	Number of farmers that established practices for the protection of watersheds.
6	Number of persons that adopted practices to improve water resources.

**Outcome #1****1. Outcome Target**

Number of farmers that adopted the recommended practices for air and water quality

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**100**2010 :** 125**2011 :** 150**2012 :**150**2013 :** 200**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 141 - Air Resource Protection and Management

**Outcome #2****1. Outcome Target**

Number of farmers that comply with the soil, air, and water regulations.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**200**2010 :** 250**2011 :** 300**2012 :**350**2013 :** 400**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 141 - Air Resource Protection and Management

**Outcome #3****1. Outcome Target**

Number of farmers that adopted the fertilization practices.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**250**2010 :** 300**2011 :** 350**2012 :**350**2013 :** 350**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships

**Outcome #4****1. Outcome Target**

Number of farmers that adopted one or more soil conservation practices.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :150                      2010 : 200                      2011 : 250                      2012 :250                      2013 : 300**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management

**Outcome #5****1. Outcome Target**

Number of farmers that established practices for the protection of watersheds.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :60                      2010 : 80                      2011 : 100                      2012 :100                      2013 : 125**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

**Outcome #6****1. Outcome Target**

Number of persons that adopted practices to improve water resources.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :250                      2010 : 300                      2011 : 350                      2012 :350                      2013 : 350**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management



**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Appropriations changes
- Economy
- Natural Disasters (drought, weather extremes, etc.)
- Other (change agency adm and com leader)
- Government Regulations

**Description**

As Puerto Rico is located in the path of hurricanes, it is annually threatened by these natural phenomena (June to November). Often, heavy rains (early in May through November) cause floods or mud slides. In the central mountain region the heavy rains increase soil erosion and sedimentation of rivers and watersheds. In relation to obtaining operation licenses or permits, the various agencies that farmers have to go through to submit the required documents, the time incurred, and the procedures are a burden and the main factors that discourage them from completing the process. Also, if the farmers still need some financing to cover the costs of improving their waste disposal system, they will incur in additional delays.

Because of the governments' inability to solve the problems with its budget, the people have the feeling that we have an unstable economy. Due to this same reason, we expect that there might be changes in the money assigned to government agencies and instrumentalities, as well as changes in public policy and regulations. A project presented or on-going can be affected if, for any reason, the person responsible for the agency's administration changes. The same situation can occur if the community leaders change and the next ones are not interested in continuing with the education process.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Case Study
- Before-After (before and after program)

**Description**

Case studies will be used to evaluate this planned program and gather information of factors that influence the farmers in adopting the recommended practices. The cases will be individual clients that have succeeded in adopting the practices. Case studies will begin during the third year of the program. Three cases will be selected. The use of pre/post-tests--two different tests--to determine knowledge acquisition. The Evaluation specialist will prepare the tests.

**2. Data Collection Methods**

- Case Study
- Unstructured
- Sampling

**Description**

The data collection can be done in different ways. For example, a sample of the community population can be informally interviewed to comprehend and understand the situation presented. The situation can then be compared with others nearby or with other municipalities with similar situations, and with the population of the Island. Also, we can interview the farmers and identify case studies. The agricultural agents are required to keep a file of the farmers they visit or offer technical assistance to. The file includes a farm development plan and records with all the main practices implemented on the farm, problems, and recommendations, as well as participation in other USDA program assistance.

**V(A). Planned Program (Summary)****Program #11****1. Name of the Planned Program**

Healthy: No matter what my size or income

**2. Brief summary about Planned Program**

This program is based on the idea that a healthy body feels good and looks good, no matter what its size. The basic attitude to be developed is: "I inherited a unique, complex, and attractive body. I will make sure it is as healthy as possible." Although it seems contradictory, studies in the USA show that low-income populations are at an increased risk of being overweight and obese. The problem may be related to the fact that they may not be able to feed their family adequately the entire month using the money available; thus being motivated to use low-cost-non-nutritious foods. Low-income participants who have no children or have pre-school children are particularly at risk for hunger.

A total of 10 lessons will be available to home economists, from which they will pick the six that are most appropriate to the expressed needs of their particular audiences. These lessons are based on learning tasks and emphasize attitudes and skills.

Among the attitudes to be developed are: "I can include more physical activity in my daily life", "I am an attractive person", "I can prepare meals for myself and for my family", and "I can make nutritious choices when I eat out".

The skills to be learned include: how to compliment a person without referring to their size, how to cook meals for myself and for my family, how to make nutritious choices when eating out, and leaving food on the plate, if too much is served. It is very important that people who have limited incomes be taught food preparation skills and how to make the best use of the money available for food. They also need to know how to increase the use of food produced by the participant or food that is already found on trees growing around the house, make wiser selection of foods, and compare prices and places to buy foods, and plan meals and snacks.

The "Guía Pirámide para Puerto Rico", which is an adaptation of MyPyramid, will be used as the basis of our educational efforts. Behavior changes anticipated include increased consumption of whole grains, fruits, and vegetables; decreased use of beverages that are basically sugar and water; choosing fruits instead of juices; including oils or avocados in their meals; and consuming milk with meals.

The home economists will be given a 2-day training to introduce the program. The first day will be dedicated to recognizing attitudes about weight and appearance and accepting the fact that a person can be healthy no matter what their size or income; and the second day will be spent experiencing the learning tasks and developing skills to create their own learning tasks. An exhibition will be developed to encourage people to sign up for the lessons.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	80%			
704	Nutrition and Hunger in the Population	20%			
	<b>Total</b>	100%			

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

The basic issue in the area of nutrition education and behavior is developing a healthy, well-nourished population within the income constraints of each participant. This issue relates to personal satisfaction in one's life, the reduction of the incidence of chronic diseases, and moderating the trend of increased obesity in the population. Current efforts to reduce the incidence of overweight and obesity are based on medical models developed over 50 years ago, and are aimed at weight control rather than health. The adequate health status issue based on nutritious food, adequate physical activity, and accepting one's body as beautiful, not health status based on a specific BMI; concerns individuals, households, communities, and society at large.

In Puerto Rico we do have no statistics concerning the presence of an adequate food supply in households to last the entire month. Studies conducted by the Puerto Rico Department of the Family show that the funds provided by NAP are not sufficient to buy nutritious food for the whole month. In working with low-income populations, it is evident that there is a problem with availability of foods in socially acceptable ways. Households with children in school have fewer problems because the children are able to have one to two meals at school; however, those with small children at home, or which consist of adults or older children who are not in school, may be at high risk for food insecurity.

CDC statistics for Puerto Rico, 1996 (earliest date for which the statistics are available), indicate that the prevalence for overweight was 37.2 (34.6-39.8) with a prevalence of obesity of 16.8 (14.8-18.8). The analogous numbers for 2002 are: overweight 39.2 (37.6-41.5, and obesity 22.0 (20.4-23.5). Persons 18 to 34 have a lower prevalence of overweight and obesity than persons 35 and older. The prevalence of overweight is greater in males than in females, but the prevalence of obesity is similar. Studies show that between 80% and almost 100% of people who lose weight regain it. An informal survey of PRAES county personnel indicates that between 90 and 95% of the people failed to maintain weight loss after two to five years. However, recent work shows that the non-diet approach (Health at Every Size) results in long term improved health in adults, although it was not associated with weight loss. Food related factors associated with overweight and obesity include: skipping breakfast, larger portion sizes, larger total amount of food served, high-fat-high-sugar diets, increased snacks, increased fruit juice consumption coupled with lower milk consumption, doing something else while eating, parent-child interactions while the child is eating, eating at fast food establishments, and increased choices in the marketplace. Participation in physical activities was identified as an important factor in 1955, and was recently confirmed in the WIN the Rockies program.

### 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

Attitudes, assumptions, and motivations of Extension personnel have to be modified:

1. The character of a person is more important than his appearance.
2. The environment is conducive to weight gain produced by an abundance of calorie dense foods and built-in lack of opportunity to engage in physical activity as a part of normal daily activities.
3. Focus on reducing weight or on weight control does not work.
4. Obesity/overweight affects all members of society not just those who manifest the problem.
5. The overweight or obese individual is making the same kind of choices that normal weight individuals do, although they may not do it to the same degree.
6. The main difference between overweight and normal weight individuals is the hereditary tendency necessary to produce the symptom of overweight or obesity.
7. Overweight or obese individuals "may" be more sedentary or "may" eat more food than normal weight individuals, but not necessarily.

The focus has to be changed to:

1. Good health as a state of physical, mental, emotional, and social well-being rather than being a particular size or shape.
2. Improvement is more important than meeting a specific goal.
3. Eating a variety of foods is pleasurable.
4. Enjoyment in eating fruits and vegetables more often.
5. Listening to hunger and fullness cues.
6. Establishing an environment in which healthful choices are the easy choices.

7. Recognizing that references, negative or positive, to weight are not tolerable.
8. "Clean your plate" may not be healthful.
9. "Forbidden" or favorite foods can be included.
10. Recognition of cues to eating that are not food related.
11. Specific goals are important to know, but, establishing behavior that would lead to those goals is more important than the goal itself.

The problem of overweight and obesity needs to be addressed at the household, school or community level, and not so much at the individual level. The Institute for Community Development of the UPR in Mayagüez will collaborate with the Extension Service in these efforts. The external environment will continue emphasis on weight loss and condemnation of those who exhibit the problem.

No one wants to admit that they have problems with having enough food for their family. Coping strategies include:

1. Going to the homes of family members to eat.
2. Feeding the children, with mothers eating less.
3. Buying foods that will fill them up, regardless of their nutritional value.

Adults learn by being presented practical solutions to perceived problems. These solutions include:

1. Growing food for their own use, in gardens or in flower pots.
2. Preparing meals for the people living in their household.
3. Planning their meals based on rice and beans or pasta, with one to two ounces of meat per person.
4. Preparing one-dish meals.
5. Selecting lower cost alternative foods of the same or increased nutritional value.
6. Comparing similar items before purchasing.
7. Making a shopping list.
8. Making use of food specials.
9. Use of herbs and condiments grown by the person rather than fat, sugar or salt to enhance

## 2. Ultimate goal(s) of this Program

Change in attitudes, assumptions and motivations, implementing steps to improve the diet/physical activity characteristics of the individual and his or her family; and having sufficient nutritious food in the house to last the entire month. The ideal would be that everyone eat according to the Food Guide Pyramid for Puerto Rico and engage in sufficient aerobic activities, activities that increase muscle strength and promote greater flexibility of the body so that good physical capacity can be developed and maintained. The program focuses on reaching new audiences every year to achieve community-wide acceptance of the premises of the program. Emphasis will be on keeping the goal in mind, and taking small steps towards that goal. For many people reaching the goal will involve major changes in many areas of their lives, and this probably will not happen within the time frame available for reasonable evaluation of a program. However, improvement can be made and measured.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	14.4	0.0	0.0	0.0
2010	14.4	0.0	0.0	0.0
2011	14.4	0.0	0.0	0.0
2012	14.4	0.0	0.0	0.0
2013	14.4	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Train the home economists regarding basic attitudes, assumptions, and motivations. Train the home economists in adult teaching methodology so that people decide to make changes.
- Initial evaluation before the beginning of the course, of what the people expect from the course/activity.
- Courses based on learning tasks
- Exhibits/Community activities which emphasize the new focus on "health, no matter what my size or income"
- An evaluation of the reporting reliability and validity is planned for fall 2008

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Other 2 (Learning Tasks)</li> <li>• Other 1 (Participatory Action Research)</li> </ul>	<ul style="list-style-type: none"> <li>• Billboards</li> <li>• Other 1 (Radio Sports)</li> </ul>

**3. Description of targeted audience**

Extension professionals; parents; the person that plans/buys/prepares food for the family; low income families with small children or no children; personnel/students in schools; community leaders

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	8000	4000	4000	900
2010	8000	4000	4000	900
2011	8000	4000	4000	900
2012	8000	4000	4000	900
2013	8000	4000	4000	900

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of nutrition classes that integrated one or more of the following components: nutrition, healthy weight, food preparation, and/or food security.

**2009** :100                      **2010** :100                      **2011** : 100                      **2012** :100                      **2013** :100

- Number of people who completed a nutrition class that integrated one or more of the following components: nutrition, healthy weight, food preparation, and/or food security.

**2009** :1500                      **2010** :1500                      **2011** : 1500                      **2012** :1500                      **2013** :1500

- Number of people taught in Farmers' Markets.

**2009** :500                      **2010** :500                      **2011** : 500                      **2012** :500                      **2013** :500

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of people who are confident that they can they can prepare meals for their family that are inexpensive and of high nutritional value and adopted one or more of the recommended practices for healthy food preparation.
2	Number of people that have adopted one or more of the recommended practices to improve the nutritional value of their diet.
3	Number of people understand and have adopted one or more of the tenants of the Health at Every Size paradigm.
4	Number of people who adopted one or more practices to improve their food security.

**Outcome #1****1. Outcome Target**

Number of people who are confident that they can prepare meals for their family that are inexpensive and of high nutritional value and adopted one or more of the recommended practices for healthy food preparation.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :300**2010** : 300**2011** : 300**2012** :300**2013** : 300**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior

**Outcome #2****1. Outcome Target**

Number of people that have adopted one or more of the recommended practices to improve the nutritional value of their diet.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :400**2010** : 400**2011** : 400**2012** :400**2013** : 400**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior

**Outcome #3****1. Outcome Target**

Number of people understand and have adopted one or more of the tenants of the Health at Every Size paradigm.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :300**2010** : 300**2011** : 300**2012** :300**2013** : 300**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior

**Outcome #4****1. Outcome Target**

Number of people who adopted one or more practices to improve their food security.

**2. Outcome Type :** Change in Action Outcome Measure**2009** :225**2010** : 225**2011** : 225**2012** :225**2013** : 225**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 704 - Nutrition and Hunger in the Population



## V(J). Planned Program (External Factors)

### 1. External Factors which may affect Outcomes

- Economy
- Public Policy changes
- Competing Programmatic Challenges
- Other (Focus Prog other Agencies)
- Government Regulations
- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes

#### Description

Puerto Rico is subject to hurricanes. A major hurricane could completely reorient the government's priorities and make it essential to spend scarce resources on recovery rather than health related programs.

Puerto Rico is going through a major financial crisis, which may or may not be solved in the near future. This situation is causing a rise in the cost of living with concomitant pressure to reduce the government payroll.

The prevalent overweight/obesity intervention model is the medical model based on weight control. This program is based on a completely different paradigm: Health at any Size. It will take a great deal of time for the home economists and the general public to change their attitudes and adopt the new model. If the FDA does not emit a ruling on the definition of whole grains soon, this material can not be adequately taught in Puerto Rico.

Obesity prevention, especially in children, is uncharted territory with few reports of success. Therefore, we have planned a new methodology to prevent obesity in children using Community Based Participatory Research (CBPR) and the Health at Every Size paradigm. Plans are to introduce this in the PRAES Caguas Region.

To assure that we can rigorously evaluate its effectiveness and have available the multidisciplinary expertise needed, a proposal was submitted to NIH in June 2007. The proposed work includes university professors with expertise in the areas of social sciences, psychology, business, physical education, dietetics, participatory research, nutrition education, website management, biostatistics, and an outside evaluator. The co-directors of the proposal include a professor of social sciences who is the director of the University Institute for Community Development, in the Arts and Sciences Faculty of the University of Puerto Rico, Mayaguez Campus, an Extension specialist in Participatory Research, an Extension specialist in Nutrition Education, and the administrator of the PRAES Caguas Region. We plan to do the work using community groups that are helped by the Extension staff and the school in the intervened community as the main areas of assuring change. The proposal was not accepted on this first try and will be resubmitted in July 2007.

## V(K). Planned Program (Evaluation Studies and Data Collection)

### 1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)
- Comparison between locales where the program operates and sites without program intervention

#### Description

Two types of evaluation studies are planned: one would be a process evaluation to analyze the validity and reliability of the indicators that are used; the second, would be if the proposal is accepted by NIH, to compare these indicators with more scientifically rigorous methods of data collection.

The first study will be done by structured interviews of the home economists of the PRAES Arecibo Region regarding their understanding of the indicators and how to measure them. A new measuring instrument will be developed and tested with the home economists interviewed to see how well it works and to get their feedback. It will then be extended to the other PRAES regions.

If the proposal is accepted by NIH, we will be in a position to test the instrument against a rigorous evaluation of an intervention to prevent obesity in children using Participatory Action Research. To measure the success of the intervention, the 12 home economists of the PRAES Caguas Region will each select an intervention and comparison community based on previously established criteria and existing good relationships in the intervened communities. Students in 3rd to 6th grades will be measured for body composition (BMI, skinfolds, bioimpedance), food habits, and meal patterns (24-hour dietary recalls), physical activity (pedometers, SAPAC), body image and self efficacy (Pathways scales) before the intervention begins and 2½ years later. Modeling of variables, longitudinal, and cross sectional comparisons will be done. An outside evaluator will measure the

effectiveness of the PAR intervention.

## 2. Data Collection Methods

- Whole population
- Sampling
- Unstructured
- Other (Open questions)

### Description

For the evaluation of the validity and reliability of the indicators, the home economists will be interviewed in their offices using a structured interview. All home economists will be asked to keep the interview questions confidential until the entire region has been covered.

If the NIH proposal is accepted, we will do the following evaluations on 1052 children in a cross-sectional and longitudinal design with a 2½ year time interval between measurements:

The 24-hour recalls of 3rd to 6th graders will be analyzed according to calories, macro-nutrient composition and problematic nutrients identified by the Dietary Guidelines Advisory Committee (152): vitamin A, vitamin C, vitamin E, calcium, magnesium, potassium, and dietary fiber. To determine meal patterns and food habits, the data will be analyzed by food groups by eating occasion. The food groups that will be used are based on a modification of the Dietary Approaches to Stop Hypertension (DASH) diet (153). Items that have added sugar and fat, such as baked products, salads, snacks, and fried foods will be doubly or triply classified: once into the parent group and then in an added sugar, and/or added other fat group.

Food Processor will be used for the nutrient analysis of the 24-hour recalls.

•A Self-Administered Physical Activity Checklist (SAPAC) based on draw-ings, activity name and estimated time spent (158) will be used. The checklist was adapted to include activities typical of Puerto Rico and was validated in 2006. The use of pedometers that measure step counts and activity time. Coe & Pivarnik (182) indicate a reason-able standard of steps per day of 11,000 for girls and 13,000 for boys.

•The use of pedometers with Puerto Rican children was validated in the 2006 pilot study. The pedometers have secure covers so that the chil-dren are not influenced by the count.

Physical Education teachers will measure the children in the fall of 2008 and spring of 2011 as part of the PE classes. The teacher will place the pedometers on the child and record the results each day for four week days (187).

We will use three methods to measure body com[position: BMI, bioelectrical impedance (Tanita scales), and skinfold (SF) measurements of the triceps and calf. To determine the body fat composition based on SF we will use Slaughter, et al. (224) equations for prepubescent boys and girls. The Physical Education teachers will admin-is-ter the instruments necessary to do the actual measurements.

We will measure body image and self effi-cacy using the Pathways Scales (225) that have been adapted and validated for Puerto Rico. The body image scale uses eight figures ranging from very thin to obese. In our study, we will ask the children to identify which is the healthiest, which is most like them, and which one they would most like to be.

**V(A). Planned Program (Summary)****Program #12****1. Name of the Planned Program**

Management of Rangeland and Forestry Resources

**2. Brief summary about Planned Program**

Puerto Rico Agricultural Extension Service (PRAES) and USDA-NRCS will join efforts to promote the management of rangelands. These collaborative efforts are directed toward the development of educational activities (training, meetings, seminars, follow-up visits and others) geared at implementing the recommended practices to protect the natural resources and the best management practices during farming. Farm demonstrations will be established as educational tools to showcase the desired practices, their benefits, and to stimulate other farmers to adopt the practices. Each farm visit will require a report of the findings and recommendations. Short courses will be offered on improved pasture varieties, fertilization, silage, cover crops, and other related topics. A pre and post test will be administered to measure the knowledge gained.

PRAES programs promote the use of better management practices that seem economically profitable for grazing hay and silage production on agricultural lands. PRAES seeks to promote the management of range lands to increase the grazing capacity, as well as the production of hay and silage, through the implementation of sustainable management practices using minimum tillage.

There is great concern with soil erosion and deforestation of our lands and problems associated with the eutrofication and sedimentation of rivers on the island. Each year risks of flooding increase causing numerous agricultural losses to the local economy.

The development of new green areas, tree conservation, and reforestation are some of the alternatives to enhance, improve and promote wildlife in and around the cities. Reforestation and development of green areas in urban and rural areas by non-government entities should be promoted. Rangeland and forestry practices will be improved to prevent the contamination of our natural resources.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Medium Term (One to five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	40%			
122	Management and Control of Forest and Range Fires	5%			
123	Management and Sustainability of Forest Resources	20%			
124	Urban Forestry	30%			
133	Pollution Prevention and Mitigation	5%			
	<b>Total</b>	100%			

### V(C). Planned Program (Situation and Scope)

#### 1. Situation and priorities

Puerto Rico's high population density demands the update and construction of infrastructure to satisfy its needs. As a result, there has been a reduction of lands available for agriculture. This squandering and the urban development threaten our natural resources.

There are 690,687 acres for agricultural uses (2002 Census of Agriculture). Of these 178,663 were improved pastures, 109,597 were nature pastures, and 64,963 abandoned pastures. We need a better and more efficient use of our lands for range and pasture production; farm animal production requires extensive, as well as intensive pasture land for dairy and livestock production.

Our main industries dairy and beef cattle, as well as other emerging agricultural enterprises, such as horseback riding and "paso fino" horses, depend directly and indirectly of hay and range lands for grazing. Seventy-eight percent (78%) of livestock farmers in PR depend on hay to feed their animals. The agricultural net income for hay and silage during 2004-2005 was \$8.9 million.

Intensive use of agricultural lands, deforestation, eutrofication, and sedimentation of rivers increase the risks of flooding, threatening the lives of people and livestock.

Large social organizations are interested in developing urban forest programs to improve the environment in their communities. Workshops and publications are needed to use and promote the protection of our forests and trees.

#### 2. Scope of the Program

- In-State Extension

### V(D). Planned Program (Assumptions and Goals)

#### 1. Assumptions made for the Program

MANAGEMENT OF RANGE RESOURCES:

- 

Land is in high demand for a variety of uses in Puerto Rico. As a result, natural resources such as land, water, and forest are being reduced in size and quality.

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It is often believed that agricultural production is to be blamed for the contamination of the natural resources and their depletion.

If farmers implemented a package of better management practices in their farming operations, they could contribute to the conservation of the natural resources.

#### MANAGEMENT AND SUSTAINABILITY OF FOREST RESOURCES:

Reforestation of steep slope lands can contribute to the conservation of soil and water and the control of sedimentation and erosion.

#### URBAN FORESTRY:

Reforestation projects of non-government entities contribute to improve the natural environment of the communities.

## 2. Ultimate goal(s) of this Program

To improve the recommended practices on range and forest resources to assure enough forage production for livestock and conserve the forest ecosystems.

### V(E). Planned Program (Inputs)

#### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	5.2	0.0	0.0	0.0
2010	5.2	0.0	0.0	0.0
2011	5.2	0.0	0.0	0.0
2012	5.2	0.0	0.0	0.0
2013	5.2	0.0	0.0	0.0

### V(F). Planned Program (Activity)

#### 1. Activity for the Program

- Conduct workshops and meetings.
- Collaborate with government agencies (DNRA, USDA-NRCS and others).
- Collaborate with our partners in the University of Puerto Rico and other educational institutions.
- Conference/training related to range management.
- Conference/training related to urban forestry.
- Participate in radio programs.
- Offer advice when clientele visit the office.
- Conduct a campaign on the prevention of forest fires.

#### 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Demonstrations</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 1 (Radio Programs)</li> <li>● Web sites</li> <li>● Other 2 (Exhibitions)</li> </ul>

#### 3. Description of targeted audience

County agents, home economists, government personnel, community residents, youth 13-18 years old, farmers, and homeowners.

**V(G). Planned Program (Outputs)****1. Standard output measures****Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1500	2000	0	0
2010	1500	2000	0	0
2011	2000	2500	0	0
2012	2000	2500	0	0
2013	2000	2500	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of farmers trained in range management.

**2009 :250                      2010 :250                      2011 :250                      2012 :250                      2013 :250**

- Number of people that participated in workshops, conferences or meetings on urban forestry.

**2009 :300                      2010 :300                      2011 :300                      2012 :250                      2013 :250**

- Number of persons trained on forest and rangeland fire prevention.

**2009 :75                      2010 :100                      2011 :100                      2012 :150                      2013 :150**

- Number of persons trained on pollution prevention and mitigation of natural resources.

**2009 :75                      2010 :100                      2011 :100                      2012 :100                      2013 :100**

- Number of agency collaborations established.

2009 :75	2010 :75	2011 :75	2012 :75	2013 :75
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- Number of people trained on natural resources and forest conservation.

2009 :200	2010 :225	2011 : 225	2012 :225	2013 :275
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V(I). State Defined Outcome

O. No	Outcome Name
1	Number of farmers that improved their pastures.
2	Number of persons that adopted one or more practices on natural resources and forest conservation.
3	Number of reforestation projects established.
4	Numbers of persons that adopted one or more practices on fire prevention in forests and rangelands.
5	Number of farmers that adopted the recommended range management practices.
6	Number of acres in improved pastures.
7	Number of persons that adopted practices for pollution prevention and mitigation of natural resources.



**Outcome #1****1. Outcome Target**

Number of farmers that improved their pastures.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :100                      2010 : 100                      2011 : 120                      2012 :120                      2013 : 130**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 121 - Management of Range Resources

**Outcome #2****1. Outcome Target**

Number of persons that adopted one or more practices on natural resources and forest conservation.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :100                      2010 : 150                      2011 : 150                      2012 :200                      2013 : 200**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry

**Outcome #3****1. Outcome Target**

Number of reforestation projects established.

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :20                      2010 : 20                      2011 : 25                      2012 :25                      2013 : 30**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 124 - Urban Forestry

**Outcome #4****1. Outcome Target**

Numbers of persons that adopted one or more practices on fire prevention in forests and rangelands.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :30                      2010 : 30                      2011 : 30                      2012 :40                      2013 : 40**

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 122 - Management and Control of Forest and Range Fires

**Outcome #5****1. Outcome Target**

Number of farmers that adopted the recommended range management practices.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :170

2010 : 170

2011 : 200

2012 :200

2013 : 200

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 121 - Management of Range Resources

**Outcome #6****1. Outcome Target**

Number of acres in improved pastures.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :500

2010 : 500

2011 : 600

2012 :600

2013 : 600

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources

**Outcome #7****1. Outcome Target**

Number of persons that adopted practices for pollution prevention and mitigation of natural resources.

**2. Outcome Type :** Change in Action Outcome Measure

2009 :500

2010 : 500

2011 : 700

2012 :700

2013 : 700

**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 133 - Pollution Prevention and Mitigation

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Government Regulations
- Economy
- Other (Availability economic incentives)
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes
- Appropriations changes

### **Description**

Every year Puerto Rico is subjected to and affected by a variety of natural disasters. Hurricanes, long periods of drought, or extensive periods of rain are the most common. Many agricultural facilities can be severely affected by these atmospheric events; which affect range production and increase the dependency on concentrated cattle feed. Changes in public policy and regulations also cause farmers to change their priorities and to postpone projects. The availability of economic incentives for farmers and non-government entities is important in making decisions requiring capital investments. Any change in priorities set by the administration will have an effect on the program outcomes.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- Other (Surveys)

### **Description**

Pre/post test will be employed to determine knowledge gained by program participants.

### **2. Data Collection Methods**

- Whole population
- On-Site

### **Description**

The data will be collected through pre- and post- test to compare and determine effectiveness of the educational programs.

**V(A). Planned Program (Summary)****Program #13****1. Name of the Planned Program**

Animal Protection

**2. Brief summary about Planned Program**

Livestock is the agricultural sector that has contributed the most to Puerto Rico's gross agricultural income. It includes dairy beef, poultry, swine, aquaculture, and small operations such as rabbits, goats, sheep, bees and horses. Of all agricultural activities, it is the sector most prone to the transmission of diseases to humans. Transportation of people, equipment, materials, and goods, which can take hours or days, increase the risk of carrying diseases from one place to another in a short period of time. This poses a great threat and risk to farm activities involving animals. Farmers should be made aware of the importance of developing a control and prevention program of animal diseases and of following the recommended production practices to reduce the risk of losses in production and low yields. The Puerto Rico Agricultural Extension Service (PRAES) will orient farmers of the importance of maintaining the animals in good health. Practices such as keeping the farm facilities clean, establishing a vaccination program, keeping the animals by age groups, and biosecurity will be promoted among farmers. The implementation of these practices will result in more successful farm operations.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases	40%			
312	External Parasites and Pests of Animals	25%			
313	Internal Parasites in Animals	25%			
315	Animal Welfare/Well-Being and Protection	10%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The livestock sector is the biggest contributor to the gross agricultural income with 48% during fiscal year 2006-2006 (Department of Agriculture). Its biggest contributors are dairy and poultry followed by beef, swine, aquaculture, and rabbits. However, given the importance of this sector, not all the farmers are following the guidance to manage their facilities properly. New trends in commercial treatments among countries make the implementation of bio-security practices indispensable to avoid the spread of diseases. The bio-security program should be improved among those farmers that have them in place and those that are not

implementing these bio-security measures should begin to do so. Animal products provide us with food, fiber, medicine, and wildlife. Animal health is an important task of farm business production that needs the support and education of our clientele. Some diseases can devastate the animal enterprise and affect humans are: foot and mouth disease, avian influenza, exotic Newcastle, bovine "spongiform encephalopathy" (mad cow disease), and swine fever. Through the Animal Protection planned program, PRAES will create awareness of these diseases and will establish partnerships with agencies such as APHIS-Veterinary Services, the Puerto Rico Department of Agriculture-Animal Division, and local animal associations. We will promote the prevention and control of diseases and internal and external parasites at farm level and detect possible highly infectious animal disease agents.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- Information about good disease management practices in farm animal and regulations will be available to all farm animals.
- PRAES will orient the farmers on the importance of adopting a disease control and prevention program and implementing the recommended practices through its educational program.
- The regulations are established by state federal agencies.

### 2. Ultimate goal(s) of this Program

Enhance the prevention and control of diseases at farm level to increase animal health, production, and quality.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	5.1	0.0	0.0	0.0
2010	5.1	0.0	0.0	0.0
2011	5.1	0.0	0.0	0.0
2012	5.1	0.0	0.0	0.0
2013	5.1	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

- Trainings.
- Establish collaborations with local and federal agencies.

### 2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Radio Programs)</li> <li>● Newsletters</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

Agricultural producers, extension professionals, community leaders, and other professionals.

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	2800	2400	0	0
2010	3000	2500	0	0
2011	3300	2800	0	0
2012	3300	2800	0	0
2013	3300	2800	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	1	1
2010	0	1	1
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of persons trained in control and prevention of diseases.

2009 :350                      2010 :375                      2011 :400                      2012 :425                      2013 :450

- Number of persons trained in bio-security program.

2009 :300                      2010 :300                      2011 :300                      2012 :300                      2013 :300

- Number of persons trained in control and prevention of internal and external parasites.

2009 :300                      2010 :400                      2011 :450                      2012 :500                      2013 :550

- Number of persons trained in animal welfare and protection.

2009 :200	2010 :225	2011 : 250	2012 :275	2013 :300
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- Number of collaborations established.

2009 :30	2010 :40	2011 : 50	2012 :60	2013 :70
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V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons that adopted disease control and prevention practices.
2	Number of persons that reduced the number of diseased animals on their farm.
3	Number of persons that adopted a bio-security program.
4	Number of persons that adopted practices in animal welfare and protection.
5	Number of persons that adopted practices for the control of parasites on their farm.



**Outcome #1****1. Outcome Target**

Number of persons that adopted disease control and prevention practices.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**300**2010 :** 325**2011 :** 350**2012 :**375**2013 :** 400**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 311 - Animal Diseases
- 312 - External Parasites and Pests of Animals
- 313 - Internal Parasites in Animals

**Outcome #2****1. Outcome Target**

Number of persons that reduced the number of diseased animals on their farm.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**200**2010 :** 225**2011 :** 250**2012 :**250**2013 :** 250**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

**Outcome #3****1. Outcome Target**

Number of persons that adopted a bio-security program.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**50**2010 :** 60**2011 :** 70**2012 :**70**2013 :** 70**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

**Outcome #4****1. Outcome Target**

Number of persons that adopted practices in animal welfare and protection.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**100**2010 :** 125**2011 :** 150**2012 :**150**2013 :** 150**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 315 - Animal Welfare/Well-Being and Protection

**Outcome #5****1. Outcome Target**

Number of persons that adopted practices for the control of parasites on their farm.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**100**2010 :** 125**2011 :** 125**2012 :**125**2013 :** 125**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 312 - External Parasites and Pests of Animals
- 313 - Internal Parasites in Animals

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Public Policy changes
- Appropriations changes
- Economy
- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Government Regulations

**Description**

Puerto Rico is located in the Caribbean and is subject to many climate changes. It is affected by natural occurrences such as hurricanes, which cause heavy rains and high winds during hurricane season (June to November), that affect animals and animal production; and long periods of drought during the dry season followed by periods of heavy rains, which often have devastating effects on animals and animal production and, consequently, on the economy.

Government changes and lack of long term planning, result in an unstable environment in government agencies. This causes changes in the agencies' priorities and their performance in general, resulting in changes and disruption in the projects and affecting program outcomes.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Before-After (before and after program)
- Other (Focal groups)

**Description**

The administration of pre and post tests is the best way to measure knowledge gained and effectiveness.

## 2. Data Collection Methods

- Other (Focal groups)
- Unstructured
- Sampling

### Description

The collection will be done using as reference the four cardinal points. A sampling of every livestock sector will be taken and questions will be discussed to measure the adoption and to know any needs to perform the adoption.

**V(A). Planned Program (Summary)****Program #14****1. Name of the Planned Program**

Community Resources Development

**2. Brief summary about Planned Program**

The Community Resources Planning and Development Program of the Agricultural Extension Service focuses in the delineation of an effective Community Economic Development Program that goes beyond training activities centered toward specific careers or job areas. Rather, it focuses in the identification and development of skills already present in the participants or the communities that might be geared toward activities of economic production, self-employment or the creation of micro-enterprises. Since agriculture represents 0.4% of the GNP (Gross National Product) in Puerto Rico (Government Development Bank, 2007), special emphasis will be given to the generation of sustainable low scale family or community-based agricultural initiatives. Accordingly, our program stresses the development of methodological tools that will allow participants with various and diverse talents, skills and dexterities to be able to organize economic activities that will allow them to take advantage of these skills for their benefit and subsistence.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	100%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Puerto Rico has experienced a sustained poverty level rate close to 50% for the past two decades. The per capita personal income is just \$12,971 (half of that of Mississippi, the poorest state of the US), unemployment figures are at 11.7%, and labor force participation is at a low, 45% (Government Development Bank, 2007; Puerto Rico Department of Labor, 2006). The leading role of the Puerto Rican government as a principal promoter of the creation of jobs and the generator of economic activity, as it used to be during the Operation Bootstrap era in the 1950-60s, is no longer active. The proportion of communities, both urban and rural, that experience long-term spells of poverty and inequality far surpass those in the US. In addition, the island is experiencing an alarming process of social decomposition with skyrocketing criminality, domestic violence, school dropout, suicide, drug addiction and alcoholism rates. Accordingly, our plan of work focuses on holistic educational strategies that will promote self-employment and community oriented initiatives as a means that will foster sustainability, self-reliance and empowerment. A participant oriented methodology will be employed (Participatory Action Research), in which participants will take an active role in defining problems and aspirations, seeking possible solutions, implementing strategies, and evaluating the results (Foote, 1991; Greenwood, 1998; Macpherson (et.al.), 2005).

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

- Holistic training of the field agents, home economist, and community leaders will help disseminate the information to the communities.
- In order to make an adult education program successful, we must integrate the participants to all aspects of the educational process (i.e., definition of the problems and aspirations, development of possible solutions, implementation and evaluation).
- Meaningful long term changes in behavior and attitudes take time to accomplish.
- Communities possess the human, cultural and material resources needed for their social and economic development.
- Sustainable, self employment and economic development is possible if people possess basic tools that will let them to take advantage of their existing skills and existing opportunities in their communities.
- The work of those who have the ministerial duty to serve the communities will be more effective and fruitful if they form strategic alliances that would maximize both institutional and human resources.
- Popular knowledge is as essential and valuable as technical knowledge. Both complement each other, both should be promoted and respected to achieve a meaningful improvement in the quality of live of the communities.

**2. Ultimate goal(s) of this Program**

To increase the communities' well-being, quality of life and sustainability through the establishment of collaborative, community oriented and community-based economic initiatives and enterprises.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	6.4	0.0	0.0	0.0
2010	6.4	0.0	0.0	0.0
2011	6.4	0.0	0.0	0.0
2012	6.4	0.0	0.0	0.0
2013	6.4	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Community assemblies, gatherings, and other meetings to establish rapport and explore needs and aspirations.
- Conference/training in areas of social investment, marketing, market study and analysis, self-employment opportunities identification, and community-based business.
- Participative Action Research strategies such as "reading the streets", participant observation, ethnographies, life histories, focal groups, informal interviews, and reflexive diaries.
- Development of "tool box" material that will empower community participants to take advantage of the endless amount of possibilities for community oriented economic initiatives.
- Establishment of strategic alliances with government agencies, non governmental organizations and community institutions to collaborate in the promotion of community-based economic initiatives.
- Development of radio programs with the participation of community members and field personnel to promote community-based economic initiatives.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Other 1 (Community assemblies, meetings)</li> <li>● One-on-One Intervention</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Radio Programs)</li> <li>● Other 2 (Publications, Exhibitions)</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Community participants, community leaders, extension professionals and other professionals.

**V(G). Planned Program (Outputs)****1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	550	2000	0	0
2010	500	5000	0	0
2011	550	5000	0	0
2012	550	6000	0	0
2013	550	6000	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

2009 :0

2010 :0

2011 :0

2012 :0

2013 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	1	1
2011	0	1	1
2012	0	1	1
2013	0	1	1

**V(H). State Defined Outputs****1. Output Target**

- Number of persons trained in community-based business.

2009 :75

2010 :100

2011 :125

2012 :125

2013 :125

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons applying the recommended practices in the process of developing a community-based business.
2	Number of community-based businesses established.

**Outcome #1****1. Outcome Target**

Number of persons applying the recommended practices in the process of developing a community-based business.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**25**2010 :** 25**2011 :** 35**2012 :**35**2013 :** 45**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**Outcome #2****1. Outcome Target**

Number of community-based businesses established.

**2. Outcome Type :** Change in Condition Outcome Measure**2009 :**5**2010 :** 10**2011 :** 10**2012 :**15**2013 :** 15**3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Competing Public priorities
- Public Policy changes
- Economy
- Natural Disasters (drought,weather extremes,etc.)

**Description**

Natural Disasters: Due to the geographic location of Puerto Rico, the island is subject to the possibility of tropical weather extremes such as hurricanes, drought, or flooding.

Economy: Puerto Rico is experiencing a major shift in its tributary system with the establishment of a sales tax for the first time. This process is especially complicated and onerous for small businesses and self-employed individuals. Less than a year after the establishment of the sales tax, the government is currently considering to reverse to the previous taxation on imports.

Public Policy Changes and Competing Public Priorities: 2008 is election year in Puerto Rico, so there is a substantial possibility that by January 2009, there will be a new government in office. Contrary to what it might be expected in the U.S., Puerto Rican political culture usually dictates that a new government in office will conduct mayor shifts in both public priorities and the public way of conducting business. Since almost half of the Puerto Rican population lives in poverty (our target population), they are particularly subjected to the tidal shifts in government interests and priorities.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- During (during program)
- Before-After (before and after program)
- Case Study



### **Description**

Pre and post questionnaires will be administered during training and workshop sessions.

Case studies will be carried out to illustrate norms that could serve to establish a program model or to illustrate anomalous outcomes that could help establish idiosyncratic or particular aspects to the community development initiative.

Evaluation studies will be conducted during the program in order to understand the changes occurring in the communities. Periodic visits to the community will be conducted.

## **2. Data Collection Methods**

- Sampling
- Case Study
- Unstructured
- Observation
- Journals
- Other (Participative Action Research Str)
- Structured

### **Description**

A sample of five communities, one from each of the PRAES regional districts, will be evaluated. Data will be collected during visits to the communities through the application of Participative Action Research strategies that include “reading the streets”, participant observation, ethnographies, life histories, focus groups, informal interviews, and reflexive diaries or journals.

**V(A). Planned Program (Summary)****Program #15****1. Name of the Planned Program**

Economics, Marketing and Policy

**2. Brief summary about Planned Program**

The planned program Economics, Marketing and Policy consists of educational and technical assistance to farmers and agricultural entrepreneurs on economics of agricultural production and farm management; business management, finance and taxation; marketing and distribution practices, and domestic policy analysis. Agriculture is a business and the farmer is an entrepreneur. The farmers have to make decisions on the use of their resources such as land, labor, capital, and management skills. They need business tools to be successful and to develop skills to stand up to the increased competition, environmental concerns, new production technologies, and changes in the economy.

Through this planned program the farmers will receive the necessary education and technical assistance to strengthen their abilities as managers and entrepreneurs. The program will provide intensive assistance in keeping records and evaluation of alternatives, tax management approaches, accounting methods, enterprise budgets, credit and income statements, inventory, agricultural risks, marketing strategies, and policies analysis.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	40%			
602	Business Management, Finance, and Taxation	30%			
604	Marketing and Distribution Practices	20%			
610	Domestic Policy Analysis	10%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

During the past years, PRAES has conducted an effective educational program. The farmers have received intensive trainings and technical assistance on farm management, finance, taxation, risk, marketing, and agricultural policies.

Decision-making has always been a challenge to the farmers and production technology is more dynamic. The challenges of the economy make it necessary for PRAES to continue offering farm management education to help alleviate the economic

situation faced by the farmers. Farmers and agricultural entrepreneurs need knowledge on diverse areas such as: how to use planning to prepare for the future, how farm managers make decisions, how to choose enterprises, how to integrate production and marketing management, farm records and accounting system, strategies for risk management, and how to obtain and use agricultural credit.

## 2. Scope of the Program

- In-State Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

Agricultural production is a competitive business. Based on this statement, the farmers need to be prepared in areas such as the economics of agricultural production and farm management; business management, finance and taxation; marketing and distribution practices, and domestic policy analysis. The program is based on the supposition that better educated farmers face new economic challenges with better possibilities of success. Farmers and agricultural entrepreneurs have a strong base to manage their business if they know different strategies. An educational program that offers the opportunity to obtain information about the economics of agricultural production and farm management; business management, finance and taxation; marketing and distribution practices; and domestic policy analysis, increase the possibility to be successful. The farmers who are early adopters of new information can expect increased income.

### 2. Ultimate goal(s) of this Program

To improve the agricultural business of the farmers and agricultural entrepreneurs through the utilization of tools and skills in economics, marketing and policies.

## V(E). Planned Program (Inputs)

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	6.5	0.0	0.0	0.0
2010	6.5	0.0	0.0	0.0
2011	6.5	0.0	0.0	0.0
2012	6.5	0.0	0.0	0.0
2013	6.5	0.0	0.0	0.0

## V(F). Planned Program (Activity)

### 1. Activity for the Program

- Farm visits
- Trainings
- Seminars
- Meetings
- Educational material (publications, newsletters, CDs)

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Education Class</li> <li>● Other 1 (Telephone calls and email)</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Software)</li> <li>● Newsletters</li> <li>● Other 1 (Publications, Exhibitions)</li> </ul>

**3. Description of targeted audience**

Farmers, agricultural entrepreneurs, Extension professionals.

**V(G). Planned Program (Outputs)****1. Standard output measures****Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	300	900	0	0
2010	300	900	0	0
2011	300	900	0	0
2012	300	900	0	0
2013	300	900	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications****2009 :0****2010 :0****2011 :0****2012 :0****2013 :0****3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

**V(H). State Defined Outputs****1. Output Target**

- Number of trainings, courses and seminars offered.

**2009 :20****2010 :25****2011 :30****2012 :30****2013 :30**

- Number of farmers and agricultural entrepreneurs trained.

2009 :300	2010 :375	2011 : 450	2012 :450	2013 :450
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V(I). State Defined Outcome

O. No	Outcome Name
1	Number of farmers and agricultural entrepreneurs that adopted one or more economic practices.
2	Number of farmers and agricultural entrepreneurs that utilize economic tools to take effective economic decisions to improve their business.

**Outcome #1****1. Outcome Target**

Number of farmers and agricultural entrepreneurs that adopted one or more economic practices.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :75****2010 : 85****2011 : 100****2012 :100****2013 : 100****3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 610 - Domestic Policy Analysis

**Outcome #2****1. Outcome Target**

Number of farmers and agricultural entrepreneurs that utilize economic tools to take effective economic decisions to improve their business.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :30****2010 : 40****2011 : 50****2012 :50****2013 : 50****3. Associated Institute Type(s)**

- 1862 Extension

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 610 - Domestic Policy Analysis

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Competing Public priorities
- Government Regulations

**Description**

Puerto Rico's location in the Caribbean puts it in the path of hurricanes with high winds and intensive rains. It is also subject to seasons of heavy rains and severe droughts which affect the economy and agricultural production.

The government's economic and budget constraints and changes in public policies affect program priorities.

## **V(K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- Case Study

#### **Description**

On going evaluations to determine whether or not the program is being implemented as planned will be carried out during the program and to identify project activities that need to be modified, deleted or added. Case studies will be employed to understand how participants have adopted the recommended practices to have a successful agro-business.

### **2. Data Collection Methods**

- Case Study
- Unstructured
- Sampling

#### **Description**

A convenience sample of farmers that have adopted the recommended practices will be selected for follow-up and evaluate how these practices have resulted in benefits for their business. Methods for data collection will include unstructured interviews and observations.



**V(A). Planned Program (Summary)****Program #16****1. Name of the Planned Program**

Animal Production

**2. Brief summary about Planned Program**

Local animal production is limited by low efficiency of production at the farm level, high costs of production and limited control of imported products. Improving the efficiency of production can allow more opportunity to increase the rentability of the animal production enterprises and advantages in competition with imported products. The aim of the Animal Production planned program is to assist producers to improve efficiency of production through modern techniques.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)****1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	15%			
302	Nutrient Utilization in Animals	20%			
303	Genetic Improvement of Animals	10%			
305	Animal Physiological Processes	10%			
306	Environmental Stress in Animals	10%			
307	Animal Management Systems	20%			
308	Improved Animal Products (Before Harvest)	15%			
	<b>Total</b>	100%			

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

The livestock enterprises in Puerto Rico are: dairy and beef cattle, swine, poultry (broiler and laying hens), fish and shrimp, rabbits, goats, and sheep. These represent approximately 48% of Puerto Rico's gross agricultural income (Statistics of the Puerto Rico Department of Agriculture for FY 2005-2006). During the past four decades, milk production has been the most important agricultural enterprise, but the stability of the industry has been challenged by several factors. Current trends of the industry show a steady decline in the number of farms, as the average herd size has increased correspondingly. At the same time, the number of acres dedicated to forage production at the average dairy has been significantly reduced by more than 12% over the past ten years. The insufficient land for feed production has resulted in the farmers' increasing dependence on imported ingredients to feed their milking cows. Consequently, there has been an increase in the number of dairy cows in confinement or semi confinement and in the need of comprehensive nutrient management at the farm level to increase efficiency and reduce the threat of soil and water contamination. In addition, the steady reduction in the consumption of fresh milk observed during the past years has exacerbated the economic stability of the milk industry, since this is the product that generates the highest income to the farmer.

On the other hand, only 23% of all the meat consumed in Puerto Rico is produced locally. The common problems faced by meat producers are: low efficiency and quality of production at farm level and limited diversification of products to satisfy the needs of consumers. These problems are caused by limited control of imported products, high costs of production per unit of product, especially land and feed. Such problems need to be addressed in order to compete with imported products.

The local animal production system could become non sustainable in the long run faced with the realities of high levels of nutrient excretion, limited amount of land for forage production, and concentrated manure disposition. Eventually, if unattended, such a system can lead to the pollution of streams, estuaries, and groundwater resources. Therefore, it is critical for the long-term sustainability of the system to reduce surplus nutrient excretion and to increase recycling of nutrients on the farm by increasing the efficiency of animal production.

**2. Scope of the Program**

- In-State Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

PRAES' experience with educational programs in animal production indicates that the adoption of production practices by farmers depends on several factors: subsidies from government agencies, laws or regulations that force farmers to adopt or establish certain practices, and the ratio of return from their investment. The increase in size of animal operations observed during the past year in Puerto Rico is evidence of the tendency of producers to improve economies of scale. The PRAES Animal Production program has six full-time specialists at the state level and Extension agents in all the local offices. The success of the program in reaching the target audience depends on the number of agents assigned to work in animal production and the direct work of the agricultural agents with the farmers.

**2. Ultimate goal(s) of this Program**

To improve the animal production and products through better management practices.

**V(E). Planned Program (Inputs)****1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	15.1	0.0	0.0	0.0
2010	15.1	0.0	0.0	0.0
2011	15.1	0.0	0.0	0.0
2012	15.1	0.0	0.0	0.0
2013	15.1	0.0	0.0	0.0

**V(F). Planned Program (Activity)****1. Activity for the Program**

- Conduct seminars, meetings and workshops.
- Offer counseling and orientation
- Establish collaborations with other local and federal agencies and other University partners on research and extension programs.
- Work in collaboration with the communications media.
- Write and submit extension and research proposals.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● One-on-One Intervention</li> <li>● Group Discussion</li> <li>● Workshop</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● TV Media Programs</li> </ul>

**3. Description of targeted audience**

Farmers, Extension professionals, government personnel, and private professionals.

**V(G). Planned Program (Outputs)****1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	3400	5000	0	0
2010	3600	6000	0	0
2011	3600	6000	0	0
2012	3600	6000	0	0
2013	3600	6000	0	0

**2. (Standard Research Target) Number of Patent Applications Submitted****Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	1	4	5
2010	0	5	5
2011	1	5	6
2012	0	5	5
2013	1	5	6

**V(H). State Defined Outputs****1. Output Target**

- Number of farmers trained on animal production.

**2009 :300                      2010 :300                      2011 :300                      2012 :300                      2013 :300**

- Number of farmers trained on control of environmental stress on animals.

**2009 :100                      2010 :100                      2011 :100                      2012 :100                      2013 :100**

- Number of farmers trained on animal products.

**2009 :70                      2010 :80                      2011 :100                      2012 :100                      2013 :100**

- Number of collaborations established.

**2009 :70                      2010 :80                      2011 :100                      2012 :100                      2013 :100**

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons that improved efficiency of animal production.
2	Number of persons that adopted one or more practices to control heat stress.
3	Number of persons that improved the quality of their product.
4	Numbers of persons that improved the animal reproduction practices.
5	Number of persons that improved the nutrient utilization practices in animals.
6	Number of persons that increased animal production after adopting the recommended practices.

**Outcome #1****1. Outcome Target**

Number of persons that improved efficiency of animal production.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**160**2010 :** 170**2011 :** 180**2012 :**200**2013 :** 200**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**Outcome #2****1. Outcome Target**

Number of persons that adopted one or more practices to control heat stress.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**50**2010 :** 40**2011 :** 50**2012 :**50**2013 :** 50**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**Outcome #3****1. Outcome Target**

Number of persons that improved the quality of their product.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**50**2010 :** 40**2011 :** 50**2012 :**50**2013 :** 50**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**Outcome #4****1. Outcome Target**

Numbers of persons that improved the animal reproduction practices.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**60**2010 :** 70**2011 :** 80**2012 :**90**2013 :** 90**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**Outcome #5****1. Outcome Target**

Number of persons that improved the nutrient utilization practices in animals.

**2. Outcome Type :** Change in Action Outcome Measure**2009 :**90**2010 :** 100**2011 :** 120**2012 :**150**2013 :** 150**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**Outcome #6****1. Outcome Target**

Number of persons that increased animal production after adopting the recommended practices.

**2. Outcome Type :** Change in Condition Outcome Measure

2009 :125

2010 : 140

2011 : 150

2012 :150

2013 : 150

**3. Associated Institute Type(s)**

•1862 Extension

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Competing Public priorities
- Appropriations changes
- Government Regulations

**Description**

Because Puerto Rico is a tropical island, it is subject to extreme weather conditions such as hurricanes or prolonged periods of heavy rains or droughts. These prolonged periods of too much rain or no rain at all can affect animals and animal production, as well as crops, increasing the dependence on imported ingredients for animal production. Changes in the public policy and regulations can also affect animal production, making farmers change their priorities. The development of the program depends on the amount of time that the agricultural agents allocate to it. Administrative changes in the priorities can affect program outcomes.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Before-After (before and after program)
- Case Study

**Description**

A survey among participants prior to initiation of trainings and immediately after their completion will evaluate their knowledge and attitudes about animal production systems. Case studies will be used to evaluate this planned program with the purpose of compiling information about the factors that influence the participants' adoption of practices.

**2. Data Collection Methods**

- Sampling
- Observation
- Case Study



**Description**

The planned program will use qualitative methods including observation and case studies to collect the data.